IDG.net

SPECIAL REPORT: Whatever skill you're looking for, it will cost you dearly. Our Annual Skills Survey reveals that nearly all top skills come at a salary premium. Page 89

COMPUTERWORLD

The Newsweekly for Information Technology Leeders
News updetes, feetures, forums: www.computerworld.com
November 17, 1997 · Vol. 31 · No. 46 · 176 pages · $3/Copy $48/Year

JOHN G

IS manager Brian Jaffe rolled up his sleeves to look at which practices can cut total cost of ownership of desktop PCs

Microsoft and other vendors at this week's Comdex/Fall '97 are touting wares that supposedly reduce the total cost of ownership (TCO) of the hodgepodge of PCs in your organization. The gurus agree that TCO can be cut by about 15% by employing "best practices" such as enforcing standards and implementing desktop management technologies.

We asked IS manager Brian Jaffe to identify which TCO-slicing recommendations can really snip a few bucks and which ones are just wishful thinking.

Managing, page 93

Migration costs sting 16-bit users

By Sharon Gaudin and April Jacobs

DESPITE Microsoft Corp.'s efforts to push users to its 32-bit platform, nearly half of the approximately 72.3 million Windows users (Windows 3.1, 95 and NT) are still struggling to run their legacy 16-bit applications, shelling out millions to rewrite them and digging deep for costly hardware upgrades.

> Migration feels like an endless, costly journey
> DAVE LINGREN, DUNSGATE

Those customers will be left further behind when Microsoft this week outlines rollout plans for its 32-bit Windows 98 and Windows NT operating systems at Comdex/Fall '97.

Those plans include two specialized demonstrations of Windows 98 capabilities — one aimed at consumers, the other at corporate users. The company also will outline its plans for Hydra, its multiuser version of NT.

Microsoft has responded to user concerns about migration costs with a number of software tools (see chart, page 141).

However, some users say that isn't enough.

Network manager Keith Thibodeaux called the disparity between the 16- and 32-bit environments the "biggest migration pitfall." Thibodeaux, who works at United Companies Lending Corp. in Baton Rouge, La., wouldn't be specific, but he said the move has cost his company millions of dollars.

Microsoft, page 141

COMDEX PREVIEW

- **Exclusive CW survey.** Users rate usefulness of trade shows, **pages 1 and 16**
- **Booth bimbos.** Comdex cheesecake hurts gains by women in IS, says Laura DiDio in Ms. MIS. **Page 98**
- **Buying PCs online.** CW taps IS pro Tom Lamoureux to explore shopping on the Web. **Page 106**

Lamoureux

- **Exchange 5.5** lets users consolidate mail servers. Barb Cole-Gomolski, **page 1**
- **Catch the Windows CE 2.0** buzz. Kim Girard, **page 16**
- **Speak up!** 1998 will be the year of speech-recognition-enabled software. Gordon Mah Ung, **page 17**

Outsourcing watchword: Renegotiate

By Jaikumar Vijayan

THE POSSIBLE dismantling of a $550 million contract between retailer Sears PLC in the U.K. and Andersen Consulting demonstrates why a growing number of corporations are busy renegotiating their outsourcing agreements these days.

The case highlights the impact that changes in technology, management and business objectives can have on outsourcing plans.

OUTSOURCING CONTRACTS

A Dataquest study this year of 130 corporations showed that 53% of information technology outsourcing deals and 73% of business process outsourcing deals were renegotiated or being renegotiated. Of those, more than 17% were renegotiated less than six months

Outsourcing, page 14

GM's IT revamp fueled by cuts in outsourcing

By Thomas Hoffman

LET THE BIDDING BEGIN.

Over the next nine years, General Motors Corp. plans to open up nearly $1 billion in outsourcing deals to Electronic Data Systems Corp. competitors. EDS is an outsourcing unit that was spun off as a separate company last year.

GM's outsourcing strategy is part of a far-reaching overhaul of its information technology environment (see story, page 12).

In fact, *Computerworld* has learned that GM already has signed its first non-EDS outsourcing contract, a deal that farms out LAN services in the U.K. to Digital Equipment Corp.

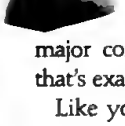
The Digital deal, which analysts placed at less than $30 million, represents a fraction of the $4 billion GM spends annually with EDS.

But analysts said vendors such as IBM, Digital and Andersen Consulting will try to leverage such smaller contracts into

GM, page 12

NEWSPAPER
#8XBBJFT# **********5-DIGIT 48103
#48103UIV300SR003# JUL 96 001 6535
UNIVERSITY MICROFILMS INT 11
SERIAL PUBLICATIONS
300 N ZEEB RD
ANN ARBOR MI 48103-1500

Not all endorsements require a profes with a $40 million contract.



No endorsement can make you feel comfortable unless it comes from a credible source. And with one major corporation after another switching to Gateway 2000, that's exactly what you get.

Like you, other corporate IS/IT managers needed business computers specifically designed to meet their needs and exceed their expectations. So that's precisely what we gave them.

For starters, the E-Series desktop line meets manageability head-on with features like stable network-ready platforms, DMI compliance and LANDesk Client Manager. So your company can grow at its own pace.

And no one in the industry can match the degree of modularity offered by Gateway™ Solo™ portable computers. Now, not only can you switch components individually with one product, you can also switch components across the entire Gateway Solo line.

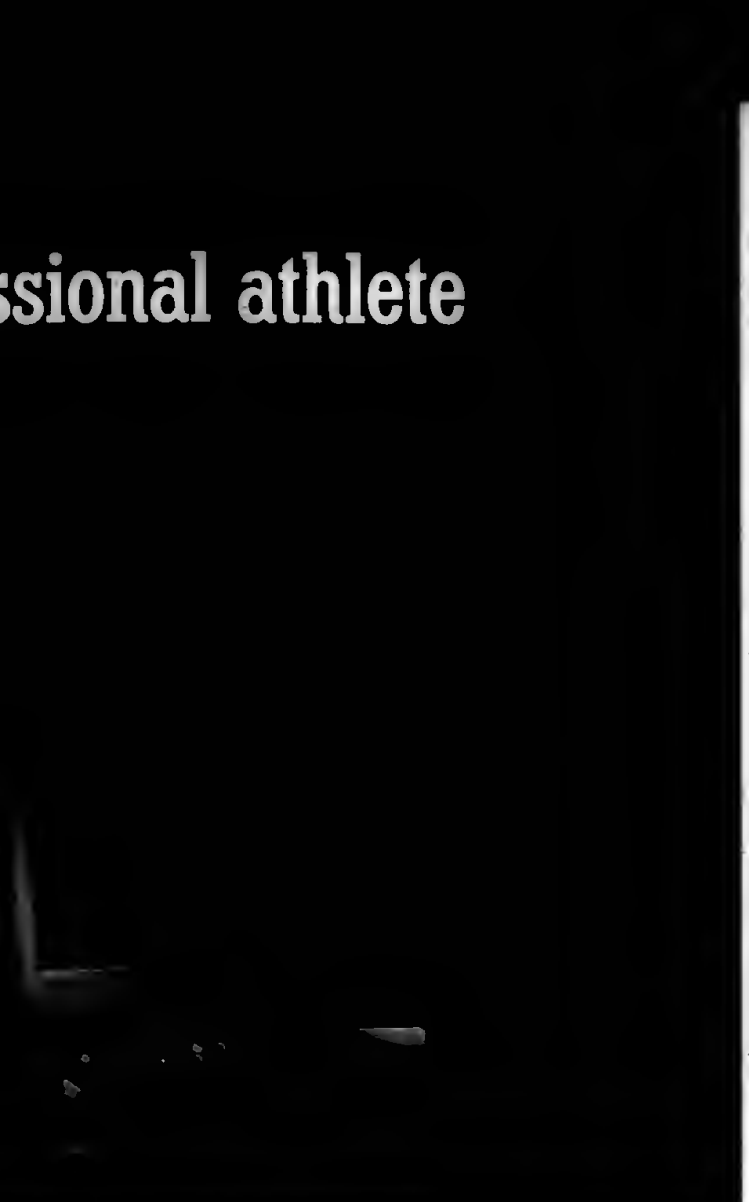
We also have a full line of servers that are among the industry leaders in fault-tolerance capabilities. And each server is equipped with components that allow for easy scaleability in memory and expansion in network size. So if your company grows from 30 employees to 3,000, now your network can too.

Of course, our full line of workstations can grow with you as well. Each workstation is certified with Microsoft Windows NT and leading application software. And each one features industry-leading graphic power which provides you with uncompromising performance.

The way we see it, when it comes to business computers, we won't stop until we're the leader. So give us a call, and we'll put you in touch with one of our sales representatives. They'll be happy to answer all your questions. Of course, you could also talk to our friends at Union Pacific, Ocean Spray, Hughes Defense Communication...

©1997 Gateway 2000, Inc GATEWAY 2000, black-and-white spot design, "G" logo and "You've got a friend in the business" slogan are registered trademarks, GATEWAY and Gateway Solo are trademarks, and Gateway Gold is Pentium II processor. The Gateway Solo PC does not contain the Pentium II processor All other brands and product names are trademarks or registered trademarks of their respective companies Many Gateway 2000 pro change without notice or obligation. Prices do not include sh[illegible] or applicable sales tax. Gateway 2000 Major Accounts, Inc is a wholly owned subsidiary of Gateway 2000, Inc. *E-Series PCs are covered by a three-year li

ssional athlete



E-1000 Low Cost Network-Ready Desktop • Intel® 166MHz Pentium® Processor with MMX™ Technology • 16MB SDRAM • 256K Pipelined Burst Cache • EV500 .28 Screen Pitch 15" Monitor (13.9" viewable) • Integrated PCI Video with 2MB DRAM • 1.2GB EIDE Hard Drive • 3.5" Diskette Drive • 16-Bit Sound Blaster® Compatible Business Audio • Integrated 10/100 Fast Ethernet • E-Series Low-Profile Desktop Case • 104-Keyboard & Mouse • Microsoft® Windows® 95 • Desktop Management Interface (DMI) 1.1 Compliant • Intel LANDesk® Client Manager 3.01 **$1099** Business Lease †$40/mo.

E-3100SE Mainstream Network-Ready Desktop • Intel 233MHz Pentium® II Processor with MMX Technology • 32MB SDRAM • Integrated 512K Pipelined Burst Cache • EV700 .28 Screen Pitch 17" Monitor (15.9" viewable) • AccelGraphics® Permedia® 2 32-Bit AGP with 8MB SGRAM • 3.2GB Ultra ATA Hard Drive • 12X CD-ROM Drive and 3.5" Diskette Drive • 3Com® Ethernet Adapter • E-Series Mid-Tower Case (shown with desktop case option) • 104-Keyboard and MS® IntelliMouse™ • MS Windows 95 • (DMI) 1.1 Compliant • Intel LANDesk Client Manager 3.01 • Gateway Gold℠ Service and Support for E-Series PCs* **$1999** Business Lease †$73/mo.

E-3100XL High Performance Network-Ready Desktop • Intel 300MHz Pentium II Processor with 512K ECC Cache • 64MB SDRAM • EV900 .26 Screen Pitch 19" Monitor (18" viewable) • AccelGraphics Permedia 2 32-Bit AGP with 8MB SGRAM • 6.4GB Ultra ATA Hard Drive • 12X CD-ROM Drive and 3.5" Diskette Drive • 3Com Ethernet Adapter • E-Series Mid-Tower Case • 104-Keyboard and MS IntelliMouse • MS Windows 95 • (DMI) 1.1 Compliant • Intel LANDesk Client Manager 3.01 • Gateway Gold Service and Support for E-Series PCs* **$2999** Business Lease †$110/mo

E-5002 Technical Workstation • Intel 300MHz Pentium II Processor (expandable to two processors) • 128MB ECC SDRAM • EV900 .26 Screen Pitch 19" Monitor (18" viewable) • 8MB AccelGraphics Permedia 2 AGP Graphics Card • Seagate® 9GB 10,000 RPM Ultra Wide SCSI Hard Drive • 12X SCSI CD-ROM Drive and 3.5" Diskette Drive • 3Com 10/100 PCI Network Card • E-Series Workstation Tower Case • 104-Keyboard & MS IntelliMouse • Intel LANDesk Client Manager 3.01 • MS Windows NT® 4.0 **$4999** Business Lease †$183/mo. CDRS-03 **32.42**

Gateway Solo 2300 Portable • 12.1" SVGA TFT or SVGA DSTN Color Display • Intel Pentium Processor with MMX Technology up to 233MHz • SDRAM Expandable to 192MB • 256K Pipelined Burst Cache • 128-Bit Graphics Accelerator w/64K Colors • Up to 4GB Hard Drive • Modular 3.5" Diskette Drive • Modular 6X min/11X max CD-ROM Drive • 16-Bit Wavetable Sound & Stereo Speakers • NiMH Battery & AC Pack or a 12-Cell Lithium Ion Battery & AC Pack • 85-Key MS Windows 95 Keyboard • Carrying Case • NTSC/PAL Video Out • USB Ports & Zoomed Video • MS Windows 95 or MS Windows NT 4.0 • MS Works 95 or MS Office 97, Small Business Edition plus Bookshelf® 96 • LapLink® for Windows 95 & McAfee® VirusScan • Gateway Gold Service and Support for Portable PCs **Prices starting at $2099** (Quantity 1) Business Lease †$77/mo

Gateway Solo 9100 Portable • 13.3" XGA TFT Color Display (1024 x 768 resolution) • Intel Pentium Processor with MMX Technology via Intel's Mobile Module (I.M.M.) • SDRAM Expandable to 192MB • Up to 512K Cache • 4MB EDO Video RAM (1280 x 1024 external) • Up to 5GB Hard Drive • Removable Combo 6X min/11X max CD-ROM & 3.5" Diskette Drives • Premium Sound System w/16-Bit Wavetable Sound & Yamaha® Stereo Speakers • 12-Cell Lithium Ion Battery & AC Pack • Full 88-Key MS Windows 95 Keyboard • Carrying Case • NTSC/PAL Video Input & Output • USB Ports & Zoomed Video • 15-Pin MIDI/Game Port • MS Windows 95 or MS Windows NT 4.0 • MS Works 95 or MS Office 97, Small Business Edition plus Bookshelf 96 • LapLink for Windows 95 & McAfee VirusScan • Gateway Gold Service and Support for Portable PCs **Prices starting at $3499** (Quantity 1) Business Lease †$128/mo

NS-7002 Workgroup Class Server • Intel 300MHz Pentium II Processor with 512K Cache (expandable to two processors) • Error-Checking and Correcting Memory Subsystem with 64MB RAM • Several RAID Upgrades Available • 4GB Ultra Wide SCSI Hard Drive • 12X SCSI CD-ROM Drive and 3.5" Diskette Drive • 3Com 10/100 Ethernet Adapter • Seven-Bay Server Tower Case • 325-Watt Power Supply • 104-Keyboard & Microsoft IntelliMouse • InforManager™ Server Management System with ActiveCPR Processor Protection **$3299** Business Lease †$121/mo

NS-8002 Department Class Server • Intel 300MHz Pentium II Processor with 512K Cache (expandable to two processors) • Error-Checking and Correcting Memory Subsystem with 128MB RAM • Quick Hot-Swap (QHS) RAID Storage System with Three Channel Controller • Three Hot-Swappable 4.2GB SCA Hard Drives • 12X SCSI CD-ROM Drive and 3.5" Diskette Drive • 3Com 10/100 Ethernet Adapter • Thirteen-Bay Server Tower Case • Dual 365-Watt Redundant Power Supplies with Loadshare Capability • 104-Keyboard & MS IntelliMouse • InforManager Server Management System with ActiveCPR Processor Protection **$7099** Business Lease †$295/mo.

NS-9006 Enterprise Class Server • Two Intel 200MHz Pentium Pro® Processors with 512K Cache (expandable to six processors) • Error-Checking and Correcting Memory Subsystem with 128MB RAM • Quick Hot-Swap (QHS) RAID Storage System with Three Channel Controller • Three 4.2GB SCA SCSI Hard Drives • 12X SCSI CD-ROM Drive and 3.5" Diskette Drive • 3Com 10/100 Ethernet Adapter • Double-Wide Fourteen-Bay Chassis • N+1 Power Supply Subsystem with Two Hot-Pluggable 350-Watt Power Supplies (upgradeable to four) • 104-Keyboard & MS IntelliMouse • InforManager Server Management System with ActiveCPR Processor Protection **$12,999** Business Lease †$476/mo.

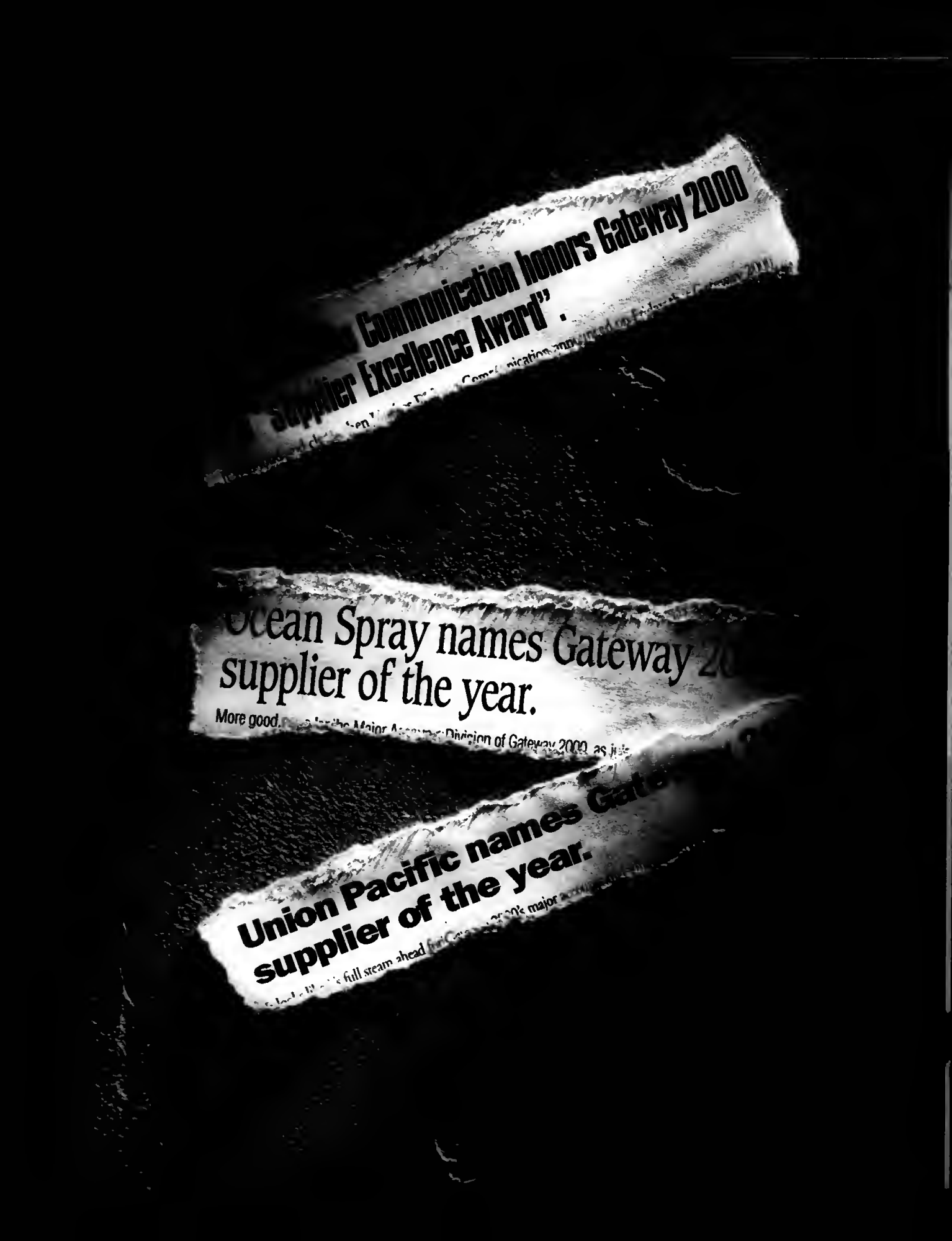
GATEWAY2000

"YOU'VE GOT A FRIEND IN THE BUSINESS"®

CALL 1-888-888-0787 www.gateway.com

Gateway 2000 Major Accounts, Inc.

a service mark of Gateway 2000, Inc. The Intel Inside Logo, Intel, LANDesk and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Not all Gateway E-Series PCs and NS-Series Servers contain the ducts are custom engineered to Gateway 2000 specifications which may vary from the retail versions of the software and/or hardware in functionality, performance, or compatibility. All prices and configurations are subject to mited warranty. Length and type of service varies by product. Call or write for a free copy of our limited warranty: 800-846-2000. 610 Gateway Drive, N. Sioux City, SD 57049 †Leasing arranged by independent leasing companies


Communication honors Gateway 2000
Supplier Excellence Award".
Ocean Spray names Gateway
supplier of the year.
More good.
Union Pacific names
supplier of the year.

UP FRONT

The new legacy

An albatross. A tired legacy. A big, expensive, overly complex computing platform that no longer inspires innovation.

Are we talking mainframe here? No, personal computer. As the industry gathers in Las Vegas this week to celebrate all things PC, it confronts what is in effect a midlife identity crisis. The PC industry has settled into the same kind of boredom-and-consolidation phase that hit the mainframe market in the late '80s. Consider the following:

■The hardware business is in an ongoing cycle of buyouts and bankruptcies. Differentiation is based almost solely on price and service. No major new PC maker has hit the scene in 10 years.

■Software talent has deserted the PC platform. The companies that defined the desktop — Lotus, Ashton-Tate, Borland, WordPerfect — are either out of business or into something else. The most innovative new software companies — Netscape, Yahoo, JavaSoft — don't care if you run their products on a PC or a toaster.

The PC industry is confronting a midlife identity crisis.

■The PC industry "thought leaders" are repositioning. Esther Dyson's PC Forum conference hasn't been about PCs for years. PC publications are recasting themselves as information systems or Internet journals, so little is there left of interest in the desktop.

■The idea of downsizing mainframes to networks of PCs — so popular four or five years ago — turned out to be dumb. The client/server concept is under attack as performance and manageability problems overwhelm hardware cost savings.

To those who remember the cockiness of the early PC pioneers, this turn of events is ironic. The PC industry has lapsed into listlessness while the big-system concept has staged somewhat of a comeback.

Comdex attendees may note that the computer industry is moving beyond the PC, whose limitations are becoming all too clear.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

Morphing the PC model

Shifts in PC buying patterns, such as the move to direct sales, are evident from interviews with experienced PC buyers. They told us what really matters to them is how well their vendors know them, whether a vendor can deliver dozens of identically configured PCs and the fine balance between price and support.

Buyer's Guide, page 101

NT Workstation luring users

By Laura DiDio

A RANDOM polling of IS managers indicates that Windows NT Workstation migration is heating up, thanks to declining hardware costs and a big push by Microsoft Corp. to ease the upgrade path.

DESKTOP STRATEGIES

Although the move to the 32-bit Windows NT Workstation platform is accelerating, it won't displace Windows 95 as the dominant operating system for at least four years, analysts and Microsoft executives said.

Still, NT Workstation's superior security (see related story, page 28) and automated management capabilities are combining with a robust Zero Administration Kit and support for a wider array of software drivers to make NT Workstation more attractive as a mainstream operating system.

OS LEAPING

In interviews last week with 13 Fortune 1,000 corporations, information systems managers attributed growing interest in NT Workstation to the rapid dissipation of traditional hindrances, such as the decline in RAM, storage and overall PC costs.

Although 80% of companies still use 16-bit applications that run on Windows 95 and legacy Windows 3.1 and DOS operating systems, half the corporate users interviewed plan to skip Windows 98 entirely.

"Chances are very good that we'll bypass Windows 98 and go directly to Windows NT Workstation," said Keith Thibodeaux, a network manager at United Companies Lending Corp. in Baton Rouge, La. "We did a cost comparison between Windows 98 and [NT Workstation] a couple of months ago. The price of memory is no longer a factor; 32M bytes of RAM is now about $79," Thibodeaux said.

Users cited more-robust security and management capabilities as the most compelling reasons to leapfrog Windows 95 or 98 in favor of Windows NT Workstation.

"The Zero Administration efforts are crucial, and Microsoft is putting a lot more energy into [NT Workstation] management. With Windows 95, instead of Zero Admin, we have 100% administration," Thibodeaux said.

Martin McAdam, general manager of international sales and marketing at An Post, the Irish national Postal Service in Dublin, said it decided a year ago to skip Windows 95. "[NT Workstation] is more robust and C2-certified for security. Windows 95 has no security to speak of," McAdam said. He added

NT migration, page 139

Trade shows have the edge

More than ever, users are looking to trade shows for information about IT, despite tight budgets and cheaper options, such as searching the World Wide Web.

An exclusive *Computerworld* survey of 103 information systems employees found that 64% are attending the same number of trade shows as last year, but 27% said they are attending even more shows and conferences.

Users also said their budgets for such travel and training are slowly creeping up. But respondents were split on whether regional or national shows provide more bang for the buck.

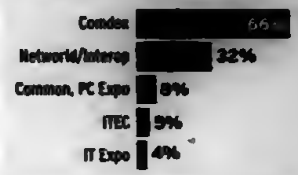
A whopping 75% said the availability of fast data from the Internet hasn't altered their plans to attend trade shows.

—Tim Ouellette

Comdex Snapshot

It's show time

The top five shows or industry events



Base: 234 respondents; multiple responses allowed

Source: Computerworld Marketplace Survey

Exchange 5.5 consolidates servers

By Barb Cole-Gomolski

USERS MOVING to Microsoft Corp.'s Exchange 5.5 are touting the program's ability to ease administration by consolidating electronic-mail servers.

Slated for release this week at Comdex/Fall '97, the upgrade also lifts the 16G-byte limit on server storage, which made it hard to support more than 500 end users per server, users said. Now, Exchange sites can boost the scalability of their servers up to a few thousand per server by adding more disk capacity, users said.

The upgrade also has improved Internet hooks. Specifically, it supports the Lightweight Directory Access Protocol for accessing directory information over the Internet and the Internet Message Access Protocol, which gives users more flexibility in the way they access their E-mail.

"Fewer servers means lower cost of ownership," said Marion Weiler, senior messaging technologist at Chevron Information Technology Co. in San Ramon, Calif. (see related story, page 93). The oil company has about 27,000 Exchange seats. To date, it has been able to run as many as 700 users per server, but the average has been about 500 users per server, Weiler said.

In addition to fewer boxes to manage, users said eliminating servers would streamline software upgrades and make it easier to manage the entire messaging network from a central point.

Analysts were skeptical, however, that simply reducing the

Exchange, page 139

OS, application support trail NT clustering systems

By Joikumar Vijayan

SECOND-TIER VENDORS are taking the lead when it comes to delivering Windows NT systems that scale to eight processors.

But user response is likely to be muted for the moment because of lingering questions about NT's ability to scale past four processors.

"Part of the appeal of [technologies] like these is it gives users the assurance that they have the headroom to grow if they wanted to," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

But few are likely to make the move to eight-way systems until full-fledged operating system and application support is available, he added.

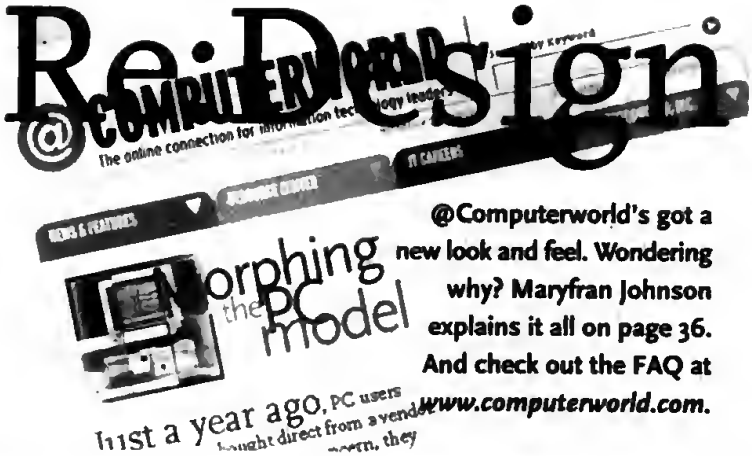
EIGHT-WAY ANNOUNCEMENTS

This week, Data General Corp. and NCR Corp. will both unveil eight-way symmetrical multiprocessing systems based on Intel Corp.'s Pentium Pro chip and running Windows NT.

DG's Aviion 8600 supports up to eight 200-MHz Pentium Pro chips, up to 8M bytes of memory and starts at about $55,000 for an eight-way system. NCR's 4380 server supports up to 8G bytes of memory, up to 108G bytes of storage and starts at $60,000 for an eight-way system.

The announcements put both companies among the forerunners in the race to bring new scalable technologies to the NT market. Market leaders such as Compaq Computer Corp. and Hewlett-Packard Co. are also working on delivering similar capabilities — but neither has a product out yet.

"One of the main reasons we like it is the ability to go eight-way if we need to scale up our application," said Russ Pine, manager of networks and telecommunications at H&R Block in Kansas City, Mo. □



Cabletron tools to aid warehouse monitoring

By Patrick Dryden

SEEKING TO EXTEND network troubleshooting beyond fault management, Cabletron Systems, Inc. and nearly a dozen other vendors this week will launch network-oriented data warehouse software designed with service levels in mind.

"We need this to build troubleshooting expertise that won't walk out the door and to establish credibility with our users," said Cabletron user Bryan Ruhf, manager of the consolidated network operation center that now controls services for 20 agencies of the state of Michigan in Lansing.

Unlike the proprietary "knowledge base" for Spectrum, Cabletron's distributed network manager, the storehouse adheres to open standards for databases. More users could benefit from Spectrum Data Warehouse, which begins beta testing now and is expected to ship next quarter.

The storehouse takes raw statistics from Spectrum and diverse monitoring sources and cleans and presents information to data mining and reporting tools. Cabletron and partners such as Optimal Networks Corp. in Palo Alto, Calif., will provide tools tailored for tracking network performance and usage.

Ruhf said he needs to store details about the state's networks and responses to problems. That will help new hires get up to speed faster, which Ruhf said is necessary because operators often take their experience to the higher-paying private sector.

Because the agencies are asking him "to prove what the network is doing and if we're living up to our promises," Spectrum Data Warehouse will provide a report card, Ruhf said. Because the data is accessible through a standard interface, the agencies can "use whatever tool they want to extract information and make sure we're not blowing smoke at them," he said. □

THE FIFTH WAVE
BY RICH TENNANT

E-mail Rich Tennant at thefywave@tiac.net

Jim Martin named president, CEO of Computerworld, Inc.

JIM MARTIN has been named president and CEO of Computerworld, Inc.

Martin, 47, was previously CEO of sister company InfoWorld Media Group in San Mateo, Calif. He is a 13-year veteran of International Data Group, Inc., *Computerworld*'s parent company, and has 15 years of high-technology publishing experience. Martin previously was publisher of *PC World*, *Macworld* and *Publish* magazines.

Jim Martin is a 13-year veteran of International Data Group, Inc.

While at *Macworld*, Martin created International Data Group's first central resource for skills transfer among global product lines. The concept has since been adopted across the company. He is on the operating boards of many IDG businesses, including *Computerworld*, IDG Books, GamePro Media Group and CIO Communications.

In 1991, he received the IDG Chairman's Cup, the highest management award the company gives worldwide. He is the only two-time winner of IDG's Entrepreneur of the Year Award.

Martin previously worked at Ziff-Davis Publishing and the New York Times Company Magazines Group. □

Clarification

A comment by Oracle Corp. President Ray Lane in an Oct. 6 interview was edited and could be misinterpreted. Lane's full comment was: "[O]ur sales force is kind of like Willie Sutton: They go where the money is. If you want to make your quota, you sell big database deals or big applications deals. Tools are not a big deal."

Corrections

Because of a production error, the Nov. 10 stock tables were for the wrong date. The information should be ignored.

Due to a reporting error in the article "SGI results worse than expected: McCracken out, layoffs planned," [CW, Nov. 3], a paragraph incorrectly stated that SGI acquired Cray Computer Corp. SGI acquired Cray Research, Inc.

Sun pushes application consolidation

▸ *Move to big servers could mean big savings*

By Jaikumar Vijayan

SUN MICROSYSTEMS, INC. this week will launch a program designed to help corporations consolidate applications spread across many Unix systems onto fewer big Sun servers.

The program was designed to appeal to a growing number of organizations to slash hardware and management costs by aggregating and recentralizing their distributed servers.

Under the Server Consolidation Program, Sun representatives will visit a client's site, assess how servers and applications could be consolidated, start a pilot project, then roll out a more broad-based consolidation later. The program also provides for ongoing asset management to track server utilization.

SAVING MONEY

"Consolidating to large platforms can lead to dramatically reduced costs" in acquisition, support and management, said John Webster, an analyst at The Yankee Group in Boston.

Terry Cieslak, chief technology officer at May & Speh in Downers Grove, Ill., estimates that his company will save about half a million dollars in the next five years through server consolidation.

The company, which provides database and information management services to corporations, is replacing three six-processor Hewlett-Packard Co. Unix enterprise servers with one of Sun's highest-end Starfire servers.

"Everything can now be managed from a single console. ... The connectivity is a lot better, you can share peripherals, technical people find it easier to support a single machine, and the performance is also better," Cieslak said.

Consolidating servers also makes it easier to perform tasks such as tape backup, as well as providing adequate disaster recovery and security, said David Krauthamer, MIS manager at Parker Hannifin Corp. in Rohnert Park, Calif.

"The proliferation of servers in the enterprise is causing a management and security nightmare. Consolidation is one way to bring a semblance of control," he said.

Sun is leading its consolidation charge with its high-end Ultra Enterprise 10000 servers, which can support up to 32 processors. The systems can be internally partitioned into as many as eight separate systems, each with four or more processors. In theory, that will let users run applications from eight servers inside the same Sun box while dedicating the same number of processors to each.

Other vendors, including HP, IBM and Digital Equipment Corp., offer similar scalability and availability on single systems, analysts said.

All those vendors are targeting the consolidation market with such hardware, but so far none has in place a formal program such as the one Sun is announcing.

IBM is developing a program around server consolidation that is to be announced next year.

That isn't stopping Kemper National Insurance Co. in Chicago, which recently consolidated multiple IBM RS/6000s into an IBM SP parallel processing system.

"We saw a rapid expansion of the number of RS/6000 systems we were going to need," said Dennis Dunlap, Kemper's manager of MVS/Unix system software. "The timing was good to install an SP and take a 'LAN to the can' approach" for its current needs and future data warehouses, he said. □

Senior Editor Tim Ouellette contributed to this story.

Nader confab airs monopolistic gripes; Microsoft calls event 'kangaroo court'

By Carol Sliwa
WASHINGTON

COMPUTER industry luminaries gathered at a Ralph Nader-sponsored conference here last week to air concerns that Microsoft Corp. will transform its grip on the software industry into control of the Internet.

Charging that the Redmond, Wash.-based software giant freezes out and intimidates competitors, the roster of high-profile speakers who attended the "Appraising Microsoft and Its Global Strategy" conference accused the company of hampering consumers' right to choose.

> The conference makes no pretense at objective or balanced treatment of the issues
> Robert Herbold

For example, Scott McNealy, CEO at rival Sun Microsystems, Inc., said Microsoft effectively locks in customers by making it impossible for competitors to discover the secretly created, arcane details in its software code that can cause a computer to crash if altered even slightly.

"Do we want all the great engineers in Redmond driving the Web technologies, or do we want all the great engineers on the planet driving?" McNealy asked.

In his summary remarks, consumer advocate Ralph Nader said, "The company's monopolistic tactics close off alternative technological paths, limit innovation and assure that consumers will pay monopoly rents to Microsoft." He also said Microsoft's "rapid amalgamation of economic power translates into a disturbing concentration of political power."

Antitrust attorney Gary Reback, who has represented several companies pushing to have Microsoft investigated for monopolistic activity, went a step further. He said Microsoft wants to "extend its monopoly" to Internet content through exclusive deals with providers, as well as control the access points through its forays into broadcast television, cable and Internet-enabled devices.

"Microsoft is using the same old dirty tricks to try to close the only real portal that we have to the Internet: the desktop," Reback said.

NO-SHOW

Notably absent, Microsoft rebuffed its invitation to what it called a "kangaroo court." It instead had employees respond with company position papers while a small group of supporters handed out buttons that proclaimed "Ralph Nader doesn't speak for ME!"

The five-page missive from Microsoft Executive Vice President Robert Herbold called it "regrettable" that Nader's group aligned itself "with a small band of Microsoft's detractors, whose apparent goal is to enlist the government's assistance in their efforts to compete with Microsoft."

A typed response from Nader described the conference as "a genuine attempt to facilitate debate about how the information economy should be constructed."

"I'm really amused by Microsoft more than angered," Nader said. "Its techniques are almost sophomoric. Here are these tough, superrich, aggressive, dominant guys, and they're backing away. If their arguments are so compelling, why don't they want to engage?"

The consumer activist said he intends to stay involved in the issue "until it reaches a self-driven momentum." Nader said the likely next step will be more detailed presentations of breakout topics at seminars and over cable television.

"There needs in the future to be more specific investigation of Microsoft practices. Together, we must begin a serious discussion of specific courses of action and remedies for the various problems identified at the conference," Nader said.

A panel of software developers and other NT suppliers and trainers also held a news conference in defense of Microsoft, claiming it encourages rather than stifles innovation. □

Playing the GAME

Microsoft, a Capitol Hill no-show as recently as 1990, is now a legitimate Beltway player. And not for nothing: Recent laws and rulings stand to save the company millions and to facilitate its embrace of the globe — and points beyond. But you've got to watch your back in Washington; Microsoft's enemies have hired guns of their own. This week, we listen as Microsoft raises its lobbying voice.

In Depth, page 109

[illegible] and [illegible] the information infrastructure in war-torn [illegible]. The Internet, page 57.

In this issue

NEWS

8 [illegible] Linux how-far self- [illegible] spells doom for most knowledge management applications.

9 [illegible] development [illegible] version.

10 [illegible] it bids a [illegible]

12 [illegible] the [illegible]

57 [illegible] to [illegible] looks like the culprit, [illegible] charges.

96 [illegible] of [illegible], no shortage of [illegible] funds.

100 [illegible] of the game. Peter [illegible]

TECHNICAL SECTIONS

47 [illegible] "tried cost-effective" [illegible] outsourcing IS.

47 Fleet-of-the-art-Internet profits, spinning off IS group to sell services to others.

47 CBS demands business-process automation as part of cost-cutting at Bristol-Myers Squibb.

THE INTERNET

57 Internet lifts mutual fund companies to global financial services organization.

57 Internet calling saves up to 90% internationally, but large users hold back.

THE ENTERPRISE NETWORK

63 Users forge their own migration path from CC:Mail to Notes, calling Lotus tools weak.

63 Simple tools fulfill user needs when management platforms are overkill.

SOFTWARE

69 IBM pitches object-oriented middleware as s cure-all, but users want proof.

69 Java vendors push spec to standardize thin clients and fight Microsoft.

69 Web load processes a challenge, but delivers the goods after a learning curve.

77 [illegible] hiring cachet, [illegible] which passes!

77 [illegible] promises enormous [illegible] vendors reach standards.

83 [illegible] consolidation among [illegible] vendors.

83 [illegible] healthcare grants data [illegible]

FEATURES

90 [illegible] manager tackles cost of ownership and finds out how to really save.

IN DEPTH

100 Microsoft lobbies in Washington, garnering advantages, but also enemies.

BUYER'S GUIDE

101 IT managers find ways to take advantage of price wars as direct and indirect vendors battle.

105 Online PC buying gives IS managers time to shop on their own terms.

CAREERS

114 Skills survey reveals that all top skills are scarce and everything has a premium.

ETC.

Company index 140
Editorial/Letters 36
How to contact CW 140
Inside Lines 144
Stock Ticker 138

Tivoli makes good on TME support promise

By Patrick Dryden
AUSTIN, TEXAS

THE QUANTITY and quality of support for Tivoli Management Environment (TME) 10, which earlier this year came under fire from some users, has improved as promised, users said.

But Tivoli still is having trouble finding and training TME experts, and users say support hasn't improved as much as Tivoli claims.

But enterprise users may get more support as the result of a business partnering program Tivoli Systems, Inc. launched last week at its second annual developers conference at corporate headquarters here.

Tivoli also is rustling up systems integrators, service providers and value-added resellers to create a broad support infrastructure by the middle of next year to move TME 10 software to small and midsize businesses, said Frank Moss, Tivoli's CEO.

The IBM management software division is fighting Computer Associates International, Inc. for the lead in the systems management market, which could reach $18 billion by 2001.

Support has been a stumbling block, however.

In May, Moss said support demands by key enterprise users forced Tivoli to postpone the rollout of a simpler form of TME 10. That package will comprise the basic framework plus five or six applications, such as system monitoring, inventory and software distribution.

Support for enterprise users began to catch up in June and is adequate now, "180 degrees different today from the beginning of the year," Moss said.

But the degree of adequacy is debatable.

"It's not fixed yet," said Don Whitfield, a vice president at NationsBank Corp. "Tivoli won't get there until all the people hired this year get experience."

Deployment of TME 10 to hundreds of the bank's Novell, Inc. NetWare servers is on hold until someone figures out how to stop Tivoli's NetWare Loadable Module from crashing the servers when it unloads, he said.

Finding someone with broad knowledge "to deal with quirks that pop up on so many different platforms" is difficult, Whitfield said. "We must be realistic about what's possible, but we had better see some significant results from these changes in six months."

The support situation "hasn't improved as much as Tivoli would like you to believe," said Ray Paquet, a research director at Gartner Group, Inc. in Stamford, Conn. "Our clients tell us they still face a serious support and service issue," he said.

Longtime Tivoli users such as Delmarva Power & Light Co. suffered "horrendous" support after IBM acquired Tivoli, said Blaine Boyles, a project systems programmer at the utility in Newark, Del.

Response improved greatly over the summer, Boyles said. Now he gets reasonable answers within two days by sending electronic mail to bypass first-level support and referrals, he said.□

SUPPORT REPORT

How Tivoli is improving support for TME 10 management software

So far:	
New hires	Added 130 consultants
Mentor program	Teamed trainees with senior consultants and architects to get field experience
Business partners	Defined sales and support program for 50 service providers
Still to come:	
Simpler deployment	New version of Tivoli Implementation Methodology in January
More training	Intensive three-week class in February
Certification	Tivoli Certified Consultant program

Will The Year 2000 Have Any Impact On Your Environment?

Choose the wrong vendor and it could sink your entire enterprise.

At Computer Associates, we've leveraged over two decades of experience in building tools for applications development, maintenance, and migration to create an award-winning solution for your year 2000 problems.

CA 2000™

CA Discovery 2000™ provides the only end-to-end solution for all aspects of your compliance effort, including analysis, fixing, testing, and life cycle management. Our CA-Fix/2000™ tool automatically fixes COBOL code, one application at a time. It's the only tool with intelligent data flow analysis providing the high speed, high volume fix for year 2000, that you need today.

Behind our CA Discovery 2000 solution stands a Professional Services team that is experienced in all aspects of year 2000 compliance. After all, as the world's leading independent software company, we have more experience re-engineering legacy applications than anybody. And with a 21-year track record of success and over $4 billion in revenue, our clients know we'll be around long after the year 2000.

Datamation Product Year

Preparing your application for the next century may be the most important job you've ever faced. Start now and turn the biggest challenge of your career into a triumph.

Call us today toll-free at 1-888-4-2000YR or visit www.cai.com

COMPUTER ASSOCIATES®
Software superior by design.

© 1997 Computer Associates International, Inc., Islandia, NY 11788-7000 All other product names referenced herein are trademarks of their respective companies

KNOWLEDGE MANAGEMENT

Users loathe to share their know-how

By Barb Cole-Gomolski

SHARING NICELY is apparently a skill that many of us don't practice in the workplace.

New research and interviews with IS managers who have deployed specialized groupware, called knowledge management, show that employees' desire to hoard their own know-how is the biggest hurdle companies face in deploying these collaborative applications.

The idea behind knowledge management is to stockpile workers' knowledge and make it accessible to others via a searchable application. Such applications can help companies make better business decisions and improve customer service.

"People are always the problem," said Jeff Held, a partner in the center for technology enablement at Ernst & Young LLP in Vienna, Va. Ernst & Young has a knowledge management application built on its Lotus Development Corp. Notes network. "You can talk about the benefits of knowledge management until you're blue, but workers won't buy into it unless it benefits them," Held said.

How to get employees behind knowledge management:

- Make the business benefit of the knowledge management application clear
- Reward workers who contribute their knowledge
- Create a corporate culture in which workers are encouraged to share information
- Ensure that the knowledge management application is user-friendly
- Involve users in design of application

Source: Delphi Consulting Group, Boston

And it can be hard to clearly explain the benefits of knowledge management to end users, several information systems managers said. In the absence of evidence that it is worth their time, workers will resist the application.

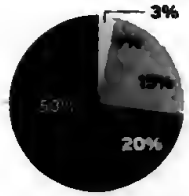
"We have come from an organizational environment in which knowledge is power, hoarded and wielded for private gain," said Hadley Reynolds, a research director at Delphi Group, Inc. in Boston. A survey released earlier this month by Delphi showed that corporate culture was cited by 53% of respondents as being the biggest obstacle to deploying knowledge management applications.

"We don't share very nicely, and I don't really know what to do about it" said an IS manager at a large oil company who watched a knowledge management application built on Notes lose favor with workers after the mastermind of the application left the company.

John McFadden, senior vice president of information and technology at The Chase Manhattan Bank Corp. in New York, spearheaded a successful knowledge management application designed to help account managers deliver better service to customers, which meant they sold more products and services. User support was strong because they were heavily involved in the development of the application, McFadden said. Account managers also had a clear understanding of how the application would enable them to more effectively do their jobs, he said.

Keeping the application simple seems to help, too. Held said that Ernst & Young's skills database — a precursor to the current knowledge management system — became outdated because workers refused to fill out an exhaustive array of electronic forms. □

Biggest obstacles to knowledge management



Base: 650 IT professionals

Source: Delphi Consulting Group, Boston

Planning blunts Web traffic spikes

By Sharon Machlis

WHETHER THE causes are plunging stock prices, a hot murder trial or the death of a princess, information systems executives who oversee popular World Wide Web sites are grappling with how to handle huge spikes in Internet traffic.

It is, they say, one of the "problems" that come with success. "I love hearing about too much traffic," said Chris Stevens, an analyst at Aberdeen Group, Inc. in Boston. "If there's no traffic, that suggests the Internet is the CB radio of the '90s."

Time's Vicki Zilaitis taps backup servers to handle more hits

Web sites can add servers, boost bandwidth and spread the load by mirroring sites, depending on where bottlenecks arise.

At Court TV, where traffic hit an all-time high during the Louise Woodward murder trial in Massachusetts, information technology executives first calculated how much traffic the site could handle. "We had never asked that question before," said Rob Golden, senior vice president of business development at the cable network in New York.

The company discovered it had twice the capacity of a previous peak load, but it arranged with its Internet service provider to temporarily double that server capacity.

"I wasn't even sure if that would be enough," Golden said. But although there were some delays in page loading times, the site stayed up, he said.

Time, Inc.'s Pathfinder site got its first taste of a surfer flood two years ago when the 1995 *Sports Illustrated* swimsuit issue was released.

"It's huge for us," said Vicki Zilaitis, director of technology at Time, Inc. New Media in New York. After that edition and a massive traffic increase during the O. J. Simpson murder trial, site architects realized they needed extra bandwidth, standby server capacity and a more modular approach to manage the occasional onslaught.

Today, Time hooks up backup servers, usually used for beta testing, as well as a backup T3 line for high-volume days such as when the swimsuit issue surfaces on newsstands.

"You're going to have to overengineer," said Fred McClimans, CEO at consulting firm Current Analysis, Inc. in Sterling, Va.

To deal with bandwidth issues, companies might want to structure agreements with service providers to use technology such as frame relay, which allows bumping up access levels when traffic soars, he said.

Companies can also consider mirroring their sites at multiple locations.

"Most important, people need to understand who their customers are and where they're accessing from," McClimans said.

High-volume days, which can be tough to plan for, can offer long-lasting benefits. After usage peaks for major news events at MSNBC, traffic drops — but not completely. "We never go back down to where we were before," said John Nicol, director of technology at MSNBC on the Internet. "There are worse problems we could have," Golden added. □

Strategies for handling heavy Web peaks

- Use modular architecture to easily add servers
- Add mirror sites in multiple locations
- Consider technologies such as frame relay that can increase network performance
- Eliminate real-time queries with proxy servers or Web caching
- Negotiate with Internet provider for flexible server capacity

Proxy servers to the rescue

Financial sites that can't afford to have regional Internet outages bring them down can pay to have connections to two different backbones.

But during last month's one-day 7% stock market drop, few brokerages could offer instant access for their customers by Internet — or by telephone, for that matter.

MSNBC stayed up to provide stock quotes for users in part by reconfiguring its site on the fly, said John Nicol, director of technology at MSNBC on the Internet.

Monitors at the site constantly check server performance. When Wall Street prices started to tank, those monitors "started going red on us," he said.

The IS team responded first by setting up a proxy server, which sent out its own queries for updated stock-price information and then returned that data to individual users. That reduced traffic compared with each user making a separate query out for the data, and it immediately boosted performance 20%.

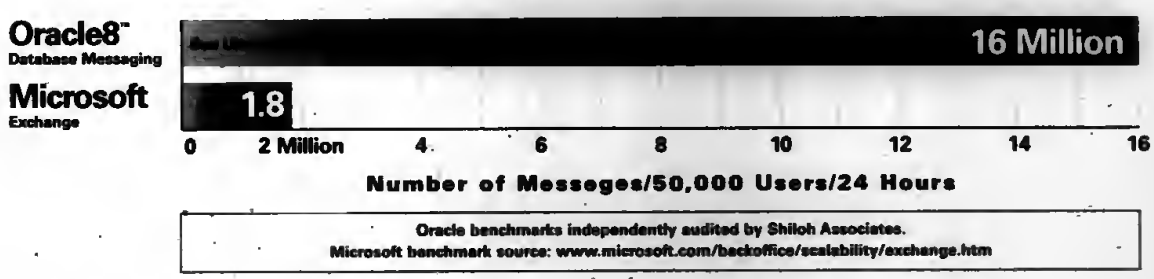
Later, MSNBC revamped the site so that people logging on to their personalized Web pages with stock quotes weren't making real-time information requests for the latest prices. Instead, users who wanted the most current financials were directed to a single market-watch page. — Sharon Machlis

Oracle8 Database Messaging Massacres Microsoft Exchange

50,000 Concurrent Users. 16 Million Messages per Day.

Scalability

The scalability benchmark measures the electronic mail messages per day for 50,000 users.



Oracle benchmarks independently audited by Shiloh Associates.
Microsoft benchmark source: www.microsoft.com/backoffice/scalability/exchange.htm

Oracle Database Messaging

- **50,276 concurrent active users**
- **16,031,520 messages in 24 hours on 1 Sun Ultra Enterprise Cluster Server**
- **40 gigabyte message store**
- **Fully mirrored for fail-safe instant recovery from catastrophic failure**
- **186 messages per second, 24 hours a day, 7 days a week, non-stop email**
- **Mission-critical performance and reliability for mission-critical messaging applications**

Oracle InterOffice™ — the industry's first database messaging software, unifying application data, messaging and business processes in a single server.

To learn more about the benefits of integrated database messaging vs. stand-alone, file-based email, call Oracle at 1-800-633-1071, ext. 11831 to receive your free White Paper, or sign up for a free-trial InterOffice account at **http://www.interoffice.net**

ORACLE®

Enabling the Information Age™

©1997 Oracle Corporation. All rights reserved. Oracle is a registered trademark and Oracle8, Oracle InterOffice and Enabling the Information Age are trademarks of Oracle Corporation. Oracle benchmarks independently audited by Shiloh Associates. Oracle on Sun Ultra Enterprise Cluster 2 x E6000 *Number derived from 11,133 messages per minute, sustained throughput. All other company and product names are the trademarks of their respective owners.

FRANKLY SPEAKING

Sun's thumb on the scale

FRANK HAYES

WHY WOULD Sun Microsystems cheat on a Java benchmark?

To get a jump on its rivals? To convince customers it has the best Java? To take a cheap shot at Microsoft?

Nope. Turns out it was, um, a public service. Sure, that's it — a public service designed to help make even better benchmarks. Sun was just, er, highlighting the weaknesses of the benchmark test it got caught cheating on. And with Sun's continued, uh, help, those benchmarks will just keep getting better.

That, believe it or not, is Sun's latest official story as to why it jerry-rigged a test system to give blowout results on Caffeinemark, a Java benchmark developed by a suburban Chicago consulting outfit called Pendragon Software Corp.

The explanation might be a little more credible if Sun's SunSoft division had started out with that story four weeks ago. Back then, SunSoft claimed its beta version of Java for Solaris 2.6, Sun's version of Unix, ran 50% faster than Java on Windows NT. The proof? Caffeinemark results that showed a score 50 times higher than NT's.

Then, when Pendragon's own benchmark engineers proved that the Solaris Java beta had been rigged to blitz through the Caffeinemark logic test, SunSoft managers denied there was any Caffeinemark-specific optimization.

Why would SunSoft cheat on a Java benchmark?

When Pendragon's people found 600 bytes of their benchmark's code in the Solaris Java beta, SunSoft managers *still* denied it — and said Microsoft had put Pendragon up to claiming SunSoft had cheated.

A week ago last Friday, the true truth came out: SunSoft was just demonstrating a weakness of the Caffeinemark for the good of the industry.

At least that's what Larry Weber, the SunSoft division's general manager, told me. He also said it wasn't really SunSoft that created the Caffeinemark-cheating code. That was the work of Sun's chip group, he said.

SunSoft, by my count, has at least four different stories on why it did what it did. But so far, nobody has been able to tell me what I really want to know: What possible benefit could there be for customers from SunSoft's cheating on a Java benchmark?

I admit I'm not a fan of benchmarks, especially the publicly available kind. I don't trust them. They don't accurately reflect what corporate IS shops use products for. They're hard to develop, and they're easy to cheat.

But every benchmark is built on a very good idea: that IS product decisions should be based on requirements and testing, not just marketing hype and popularity.

Trouble is, that's exactly what vendors of popular products with a lot of marketing hype don't want. So they cheat on the benchmarks. Sometimes it's just a matter of tweaking. Occasionally, it's the kind of clumsy fakery that SunSoft built in to its Solaris Java beta.

Either way, it's a lie — and a colossal waste of time and effort.

Then again, maybe it does offer some customer value after all. Maybe it tells us what a vendor thinks is really important to deliver to customers.

And apparently, SunSoft believes the biggest benefit it can deliver is a rigged demo.

*****

IRS update. Maybe the tide has turned on the Internal Revenue Service's efforts to go rooting through source code ["Frankly Speaking," Oct. 6].

The new tax bill passed by the U.S. House of Representatives earlier this month makes it harder for the IRS to get source code, but it still lets the agency go after it if the IRS can prove there's no other way to perform an accurate audit. The Senate will take up the bill next year. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

SHORTS

Aging software

At the Year 2000 Conference and Exhibition this week in Boston, Princeton Softech, Inc. in Princeton, N.J., will introduce Ager 2000, a tool designed to add "date aging" data to files so users can test their year 2000 fixes. The system, which will begin shipping in January, starts at $40,000 and works with IBM MVS files.

IBM updates OS/390

With Version 2, Release 4 of the OS/390 mainframe operating system out the door, IBM is prepping Version 2, Release 5 for delivery next March. The new version includes solid TCP/IP support and improved support for mainframe clustering. It also adds more security to the built-in Internet firewall and supports IBM's Component Broker middleware to run object-oriented software on mainframes, IBM officials said.

HP buys NT management tool

Hewlett-Packard Co. last week acquired NuView, Inc. in Houston. The start-up's software can centrally manage multiple servers or workstations running Windows NT. HP will sell the tool, ManageX, as part of its OpenView line and form a new business unit to help customers manage NT-based systems and applications.

'net to overhaul procurement

Internet-based purchasing will "overhaul inefficient corporate procurement practices," according to a study by Forrester Research, Inc. in Cambridge, Mass. By 1999, Internet auctions and requests for proposals will drive a second wave of Internet purchasing, the study concludes. One other impact: Users will migrate their electronic data interchange systems to Internet alternatives.

Sharp ships handheld line

Sharp Electronics Co. this week launched Mobilon, a line of handheld PCs that uses Microsoft Corp.'s Windows CE 2.0 operating system. The handhelds feature a color screen, a digital camera card option, an audio record feature for memos, a Web browser and a built-in 33.6K/9.6K bit/sec. modem. The Mobilon HC-4000, HC-4100 and HC-4500 cost $599, $699 and $990, respectively.

SAP aligns with SAS Institute

Data warehousing vendors continue to line up outside the doors of SAP R/3 users. The latest is SAS Institute, Inc. in Cary, N.C., which this week is expected to announce plans to more tightly integrate its data warehousing and analysis products with SAP AG's business applications. Meanwhile, Palo Alto, Calif.-based Hewlett-Packard Co. in early December plans to detail enhanced support for warehousing SAP data as part of its OpenWarehouse suite.

Informix to restate financials

Informix Software, Inc. in Menlo Park, Calif., this week will finally restate its financial results dating back to 1995 and reveal a product repackaging aimed at simplifying its software lineup [CW, Dec. 13]. Robert Finocchio Jr., who took over as CEO of the beleaguered database vendor in July, is scheduled to meet with financial analysts in New York on Tuesday to discuss both issues.

56K fight

Rockwell International Corp.'s Semiconductor Systems division has sued Bay Networks, Inc. in federal court in Los Angeles, claiming that unspecified actions by the Santa Clara, Calif.-based internetworking vendor violated its license for Rockwell's K56flex modem technology. Bay Networks, which also licenses competing 56K bit/sec. technology from 3Com Corp., says it is "100% in compliance" with its license.

Mainframe-to-Java

Computer Network Technology Corp. in Minneapolis next month plans to unveil a new Web-to-host package called Cool 3270. It will turn mainframe-based 3270 data streams into Java output that can be read by any Java browser. Pricing for Cool 3270 wasn't available.

Notes antivirus tool ships

Symantec Corp. in Cupertino, Calif., recently shipped a beta version of its forthcoming Norton AntiVirus for Lotus Notes, a new antivirus package that scans messages and attachments in real time to find viruses and macro viruses in Microsoft Word and Excel documents. It runs on all Lotus Notes 4.5 servers using Windows NT 3.51 or 4.0. The software will ship next month for $795 per server in a 25-user version.

Single intranet sign-on

Platinum Technology, Inc. in Oakbrook Terrace, Ill., this week will announce a version of its AutoSecure Single Sign-On software and the beta release of Web Security Management for providing single sign-on to intranets. Pricing for AutoSecure starts at $125 per user; Web Security Management is due in the first quarter next year.

SHORT TAKES As expected, AT&T named Alan G. Jones as its chief information officer, replacing Ron Ponder, who is leaving to become president and CEO of Beechwood Data Systems, Inc. in Clark, N.J. [CW, Nov. 10]. Jones, 51, had been CIO of AT&T's business and consumer markets.

Oracle to ship spiffed-up Developer/2000

▶ *Development tool upgrade promises less manual coding*

By Craig Stedman

AFTER MORE THAN a year of beta testing and strategy shifts, Oracle Corp. this week finally plans to ship a less-ornery version of its flagship development tool.

Developer/2000, which builds applications for Oracle databases, is getting spiffed up with expanded drag-and-drop capabilities, object features and other enhancements that are supposed to reduce the manual coding users need to do.

Those are welcome changes for shops that have had to pay through the nose to hire experienced Oracle developers or to give neophyte users crash courses on the database kingpin's proprietary PL/SQL programming language.

WHAT'S NEW IN DEVELOPER/2000

- Expanded set of point-and-click builders
- Wizard technology for automating development
- Object library for storing reusable components
- Unified debugger for three-tier applications
- Simplified reporting and charting capabilities

"Customers have been telling Oracle that we need a way to use the product more efficiently, and now they've listened to us," said Donna McConnell, an Oracle tools specialist at Detroit Edison Co. She also is a director of the International Oracle Users Group — Americas.

PL/SQL coding may not go away completely, but Version 2.0 of Developer/2000 should make it easier to build and modify applications, McConnell said.

Detroit Edison is testing the new release and plans to use it after a companion upgrade of Oracle's Designer/2000 database modeler comes out early next year, she added.

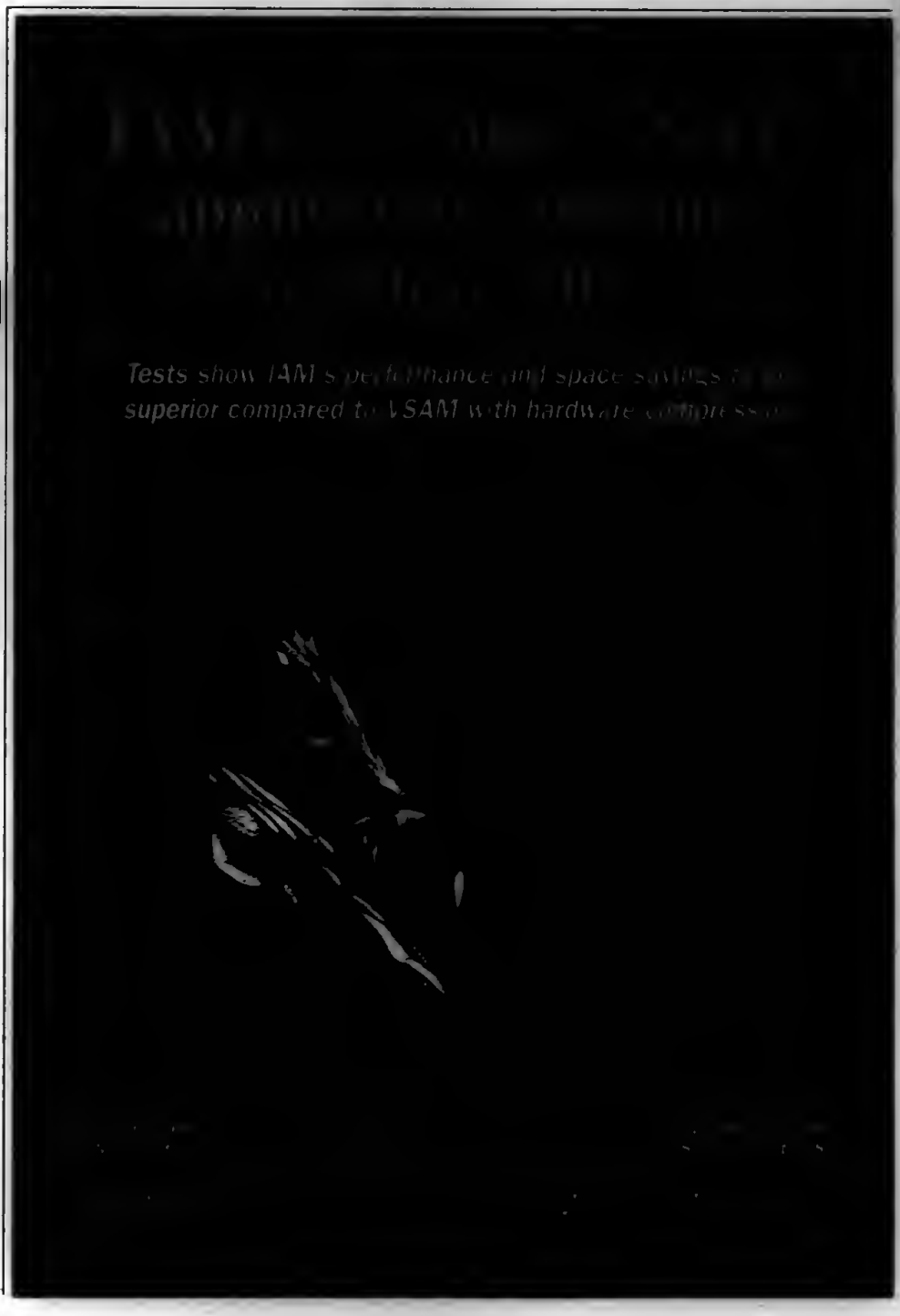
Echidna Systems Corp., a systems integrator in Victoria, B.C., is using the beta-test version of Developer/2000 2.0 to build and update geographical data applications for the British Columbia Ministry of Environment, Lands and Parks.

Developer/2000 "has always been a pretty decent product, but it's been hard for first-time users or casual coders to learn," said Thor Heinrichs-Wolpert a consultant and senior technical architect at Echidna. "Now you can get someone who isn't a guru in the tool to build applications for you."

Reducing the need for big teams of experienced PL/SQL coders could help Oracle shops cut salary and training costs, Heinrichs-Wolpert added. Oracle developers with PL/SQL skills can command salaries from $50,000 to $100,000, or more, he said.

Developer/2000 2.0 went into beta testing in September 1996 and was originally due early this year. But Redwood Shores, Calif.-based Oracle put it on hold so it could rush out a pair of interim releases that let users build thin-client applications that mix World Wide Web browsers and application servers.

The new version of Developer/2000 includes automated development wizards and supports point-and-click building of database schemas and SQL queries, Oracle officials said. The tool also is taking some initial steps into the worlds of object technology and code reuse (see chart). Prices start at $5,995 per user. □



Sun walks a fine line on Java standards

By Sharon Gaudin

WITH SUN MICROSYSTEMS, Inc. poised to lead the charge to set Java standards, users want assurance that Java's biggest supporter doesn't try to become Java's dictator.

Members of the International Standards Organization (ISO), the global body that oversees high-tech industry standards, are collecting the final vote on Sun's request to be the official submitter for Java. At press time, Sun was one vote short of the needed simple majority.

Sun's bid has drawn fire, especially from its highly vocal rival, Microsoft Corp., because it veers from the usual process of having a consortium of vendors and users act as the official overseer of a standards process.

Because Sun has a large stake in making money off Java, critics contend that if the ISO vote is successful, Sun would have far too much control over what is supposed to be an open process.

Dave Spenhoff, director of product marketing at Sun's JavaSoft division, agreed that Sun will be under tight scrutiny. But he said the company is considering some changes based on comments some countries made during the voting process. For example, he said Sun is considering making test suites for Java virtual machines — which are now part of Sun's licensing product — openly available to developers.

That news comes after reports that Sun has been high-handed with some of its major platform developers, allegedly holding the test suite to force developers to turn over their source code for testing to Sun — a company that builds and sells its own virtual machine.

DOJ's Verna Muckles: "We're going to make sure Java stays open"

"We have to test [virtual machines]," said George Paolini, JavaSoft's director of marketing. "We have to make sure every [virtual machine] is compatible so Java will run equally on all the platforms."

Corporate developers using the various Java tools don't have to license anything from Sun. And a third party does all the testing for 100% Pure Java applications.

"We're moving to Java because it's an open environment, so we hope it stays that way," said Verna Muckle, director of MIS at the criminal division of the U.S. Department of Justice. Muckle's division is piloting Sun's JavaStation network computer.

"The criminal division is not at all interested in something solely owned by one company. ... While we're piloting, I'm going to watch them, sure. We're going to make sure Java stays open, that [Sun] keep its promises," she said.

"We've been looking at ways to make the process somewhat more open," said Jim Mitchell, vice president of technology and architecture at JavaSoft. "People lose sight that that's why we've been going through this process." Mitchell said Sun is considering giving licensees a vote on any specifications being developed.

That is the kind of thing users and other software vendors will be watching, said Evan Quinn, an analyst at International Data Corp. in San Francisco.

"Sun's getting awarded the big prize," Quinn said. "Sun's got to act carefully. Everybody's going to be watching. If they start lording over this platform, people will back off and maybe even look to [Microsoft]." So far, the U.S. is the only member country, out of 27, to vote against Sun's request. Much of the backlash against Sun was led by Microsoft, which joined the ISO process for the first time soon before the vote and has been accused of trying to derail Java. □

NORTEL

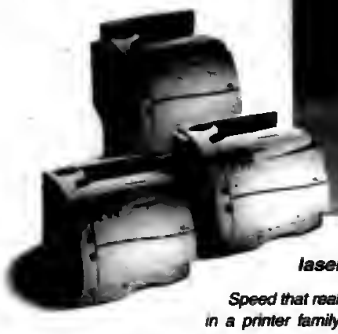
See us at COMDEX Booth H247

Now printers with greater value for those on the fast track.

"Sometimes you have to look past the market leader to find an exceptional product that is also an exceptional value."

PC MAGAZINE EDITORS' CHOICE

June 10, 1997
Lexmark Optra S 1250
Lexmark Optra S 1650



Lexmark's new 16 and 24 ppm Optra S network laser printers can help you race ahead of the competition.

Speed that really RIPs on tough, complex jobs, in a printer family with an unparalleled level of value: the new Lexmark Optra™S 1620 and 2420 network laser printers are a whole new, bold new breed of high performance machines.

An ingenious dynamic controller architecture sprints through difficult documents and supports all major network environments. (PCL® 6 and PostScript Level 2 emulations are included right out of the box.) You also get Lexmark's exclusive MarkVision™ – software that lets you manage your network printers from your PC. So you can plan toner replacements or re-direct workloads before they cause problems and wasted time. Your printers run more efficiently and you reduce your total printing costs.

Before your competition gets the jump on you, call us at 1-800-LEXMARK (800-539-6275) or visit us at www.lexmark.com. And learn more about keeping your productivity out in front.

A bold new breed of performance printers. PRINT LEXMARK

© 1997 Lexmark International, Inc. All rights reserved. Lexmark and Lexmark with diamond design, MarkVision and Optra are trademarks of Lexmark International, Inc. registered in the United States and/or other countries. PCL is a registered trademark of Hewlett-Packard Company. Other trademarks are property of their respective owners. ©1997 PC Magazine Ziff-Davis Publishing.

The challenge of a lifetime

▸ *Szygenda's mission: Rebuild IS at GM*

By Julia King
DETROIT

BILL SCHUP

JUST IMAGINE building a fully functional city from the ground up, and you begin to get some idea of Ralph Szygenda's mission as General Motors Corp.'s chief information officer.

Szygenda was hired in June 1996 from Bell Atlantic Corp. His mandates are to slash GM's $4 billion annual information systems budget "by hundreds of millions over the next five years;" implement common systems across GM's highly autonomous and somewhat recalcitrant business units; adopt an integrated design and engineering system that will halve new-car cycle times; and, perhaps most important, build an IS leadership infrastructure where none existed before.

Why would anyone want this job?

"I think it's the challenge and the visibility of the challenge," said George Heilmeier, chairman and CEO of Bellcore, one of Bell Atlantic's biggest technology suppliers. Heilmeier is now on GM's six-member technology and scientific advisory committee.

"Let's face it. Most good people like to be No. 1. Ralph is no exception," he said.

"The challenge of starting over from scratch was so overwhelming. It was too much to turn down," said Szygenda, 49, a self-described workaholic who usually puts in 12-hour days at his downtown Detroit office before hitting the treadmill for an evening workout.

"Plus," he said, "it's kind of hard to turn down the world's largest company."

Szygenda is the mastermind behind GM's ongoing transition to a technologically self-sufficient organization.

Until its 1996 spin-off from GM, Electronic Data Systems Corp. handled virtually all of GM's IS requirements, including strategy and planning.

In his first 18 months on the job, Szygenda has focused heavily on building what he calls an IS leadership infrastructure.

So far, he has hired 35 CIOs for GM's business units and another 100 or so process and technology implementation executives.

Those information technology staffers work in GM's business units, but their job is to drive common processes across the company. They also act as consultants to business unit CIOs.

With much of the hiring behind him, Szygenda has refocused on technology and implementation. Next year, he said, "is a big execution year. We have determined strategies for every part of the business, and we know where we want to go.

"I have people totally dedicated to each other. So as I chose people, I had to look for people to team," Szygenda said of the hiring process.

TECHNOLOGY FOCUS

But don't get the wrong idea. Szygenda, a mechanical engineer by training, isn't a New Age, touchy-feely CIO who emphasizes people skills over hardcore knowledge of technology.

"He's very focused on the technology," said one longtime IS executive who interviewed for, but didn't land, one of GM's 35 CIO slots. During the interview, the executive said, Szygenda "talked about setting up architectures and picking emerging technologies. I got the impression that Ralph will end up with the largest local-area networks and largest wide-area networks and more PCs than anyone else," he said.

"Ralph plays on both sides. He knows the technology of the business, but he also knows business. That's what makes Ralph unique," Heilmeier said.

As a Bellcore customer, Szygenda was "tough but fair," he added. "Ralph is a sophisticated customer. He knows what things should cost, how long they should take and how difficult they should be."

GM's three-year to-do list includes implementing off-the-shelf enterprise software across all of GM's finance and human resources operations.

NEW INITIATIVES

Also in the works is a conversion to fully integrated, math-based vehicle development systems. Those systems will enable thousands of GM designers and engineers worldwide to jointly create and test new cars in a completely virtual environment. The idea is to eliminate the time-consuming development and modification of wood and clay models.

GM also has a big data warehouse initiative under way.

It is culling customer preference and usage information from on-board systems in some GM cars and from its network of more than 8,500 dealerships, which have been linked via an electronic network known as GM Access.

"We're moving from designing a vehicle and hoping a customer will buy it to sensing what a customer wants," Szygenda said.

Taken together, "these are all monstrous changes for GM," especially when you consider the three-year implementation period, Szygenda said. "And we might miss some of them, but I'd rather start off with an aggressive schedule to change the company." □

GM will run financials on R/3 cylinders

GM has decided to make use of German engineering.

General Motors last week announced its plans to standardize on SAP AG's R/3 software to run its global financial operations. GM previously had used SAP human resources modules at its Opel plant in Germany and its AC Delco facility in France.

Terms of the deal weren't disclosed.

The move is part of an ongoing effort by GM to cut costs by standardizing on common platforms. The system is expected to help GM reduce its financial operating expenses by deploying common processes throughout its global operations, said Cherri Musser, business services information officer at GM.

GM will begin a phased rollout of the software starting with its automotive assembly and component businesses in Europe and Asia, followed by operations in North America and South America. The new system should be fully deployed by 2002.

— Thomas Hoffman

GM revamps its outsourcing

CONTINUED FROM COVER 1

a front-runner position with GM after the EDS agreement expires in 2006. "Now that other outsourcing vendors know what contracts EDS holds, they're going to do whatever they can to win that business," said Lisa Maio Ross, an analyst at International Data Corp. in Framingham, Mass.

The beneficiary, of course, is GM. The automaker not only is trying to save money by opening these contracts to competitive bidding, but it also is looking to improve quality, boost service and enhance its technology wherever possible, said Bob Chaffin, GM's director of information systems finance. "Nothing determines competitiveness like the market on a daily basis," he said.

GM's Bob Chaffin: "Nothing determines competitiveness like the market on a daily basis"

ROOM TO IMPROVE

Chaffin said that beginning next year, about $220 million worth of information technology services will be on the table. Under the EDS contract, mainframe processing and U.S. telecommunications are off limits, but "everything else is being actively considered," he said.

Chaffin emphasized that GM isn't dissatisfied with EDS. But competing offerings from best-in-class service vendors can help a colossus such as GM become a more efficient company.

"Our job is to never be satisfied, to always look for improvement," Chaffin said.

Analysts said GM is generally pleased with EDS's performance.

But EDS supplies such a broad range of services — everything from help desk to telecommunications support — that there are bound to be "pockets" of dissatisfied customers. And competing vendors will try to exploit those areas, said George Logemann, an analyst at The Yankee Group in Boston.

Under the contract, GM can auction off areas where it is either dissatisfied with EDS, looking for more expertise or seeking lower costs.

Chaffin wouldn't tip his hand as to which operations GM is considering. But he said the company is looking at off-loading pieces of its IT infrastructure and application development.

"We'll probably come up with $500 million to $600 million worth of candidates from which we'll choose a few hundred million dollars [worth of business] this year," Chaffin said.

GM last month began issuing requests for proposals for next year's contracts. Although Chaffin declined to identify functional areas up for bid, he confirmed that "there are some [requests for proposals] out there" now. □

"Psst . . . Wanna Buy Some Time?"

You Need SoftFactory/2000

There's more than one way to buy time – but you gotta know the secret. Word on the street is that SoftFactory/2000™ with SmartFind/2000™ is the only way to go if you are going to get your Y2K projects completed quickly.

TECHNOLOGY

MANPOWER

The SoftFactory/2000 solution is technology-based, requiring less manpower compared to other approaches which are primarily manpower-driven supported by a little technology.

SoftFactory/2000 is so fast and so accurate, it's like buying time between now and the year 2000. That's because SoftFactory/2000 is the only Y2K solution which uses SmartFind, an intelligent problem-solving technology that filters your code to identify only true date fields and only the date occurrences that need to be fixed.

Compare that to other approaches which rely primarily on slow and expensive manpower... assuming you can find qualified people in the first place.

Time is running short, but we can get you to compliance before the year 2000. Call us at 1-800-632-6265 today.

Download the SoftFactory/2000 White Paper from www.microfocus.com/year2000.

BEST OF BYTE PC EXPO '97

Finalist

MICRO FOCUS®

Transforming The Enterprise

© Micro Focus 1997 All rights reserved.
The Micro Focus logo, SoftFactory/2000 and SmartFind/2000 are trademarks and Micro Focus is a registered trademark of Micro Focus Limited.
All other trademarks are property of their respective companies.

Corporations keep close eye on outsourcing pacts

CONTINUED FROM COVER 1

after they were first signed.

In the case of Sears, an informatioo systems centralization effort started by former CEO Liam Strong was reversed by the board following Strong's departure in April, according to a news report from International Data Group's IDG News Service. (IDG is *Computerworld*'s parent company.)

The U.K. office of Andersen Consulting last week said it was reexamining its contract with Sears — no relation to Sears, Roebuck and Co. in the U.S. "The contract cannot stay the same because the synergies of scale present in the original contract are no longer there," said one Andersen source in the U.K. Sears officials didn't return phone calls.

Farmland's Kent Nunn: Outsourcing pacts require a great deal of trust in the vendor

BREAKING UP IS HARD TO DO

"Changes like these can render original contracts totally invalid," which leads to expensive terminations of deals, said Susan Scrupski, an analyst at Technology & Business Integrators, Inc. in Woodcliff Lake, N.J.

Such moves come as a handful of high-profile failures have begun to highlight the challenges corporations face in making large outsourcing and integration deals work.

For example, earlier this year a 10-year, $210 million outsourcing deal between Mutual of New York and Computer Sciences Corp. fell apart. The reason: disagreements about the scope and scale of the services to be provided by a joint venture formed by the two companies. Similarly, an ambitious 1995, 50-year agreement between Delta Airlines and AT&T Corp. failed with the breakup of AT&T last year.

Restructuring contracts through renegotiation is one way of pre-empting such conclusions, analysts said.

"Almost 50% of my practice right now deals with formal renegotiations leading to major restructuring of outsourcing agreements," said Dan Mummery, a lawyer at Millbank, Tweed, Hadley & McCloy in New York. The law firm specializes in IT outsourcing deals.

"Renegotiation mostly is a positive thing — to make deals work better," said Allie Young, an analyst at Dataquest in Westboro, Mass. Consider Farmland Industries, Inc., a $9.5 billion farmers cooperative in Kansas City, Mo. It recently set up a joint venture called OneSystem Group with Ernst & Young LLC to provide IT services back to Farmland.

Six months into the deal, the companies restructured the arrangement to include another vendor, Systems Management Specialists, to handle data center operations for OneSystem.

The move will save Farmland $14 million to $15 million during the next five years in labor and infrastructure costs, said Kent Nunn, chief information officer at Farmland.

"Obviously, there is a tremendous amount of change involved with some of these arrangements," Nunn said.

"For them to work, you need to have a great deal of trust in the relationship you have with your vendor" and have top-level management buy-in, Nunn said. For example, Farmland's deal with Ernst involves both companies keeping an "open book" on each other's financial affairs.

UNSPECIFIED EXPECTATIONS

The biggest challenge in making outsourcing relationships work "has to do with unspecified expectations that customers and vendors have when getting into outsourcing arrangements," said Bernie Campbell, CIO at Sonoco Products Co., a $2.8 billion packaging company in Hartsville, N.C.

Concerns such as those drove Sonoco to add a 400-page document that listed exact business objectives, technology goals, terms and conditions to a 10-page desktop outsourcing agreement it recently signed with Entex Information Services in Rye Brook, N.Y. □

Transaction action

▸ *MasterCard nixes X.25 network in time for holiday shopping season*

By Thomas Hoffman

THOSE LONG holiday shopping lines could move a little faster this season, thanks to a new transaction processing network being rolled out by MasterCard International, Inc.

The upgrade of MasterCard's Banknet from an X.25 network to a virtual private network based on frame-relay technology is expected to cut transaction processing times in half.

The Purchase, N.Y., credit-card giant has extended the network to member banks and merchants in the U.S., Canada and Singapore. It already is handling nearly 70% of MasterCard's total transaction volume.

That will be critical to MasterCard and its partners during the holiday shopping season, when point-of-sale transaction volumes typically peak at 40% above normal periods.

VIRTUAL PRIVATE NETWORK

With its old 56K bit/sec. X.25 network, MasterCard would typically have to upgrade hardware to handle the additional volumes from Thanksgiving to Christmas and then underutilize the hardware for the next three quarters.

Now, using AT&T Corp.'s frame-relay services, MasterCard can order increased bandwidth for 35 to 40 days and then "size it back down" after the holidays, said Arthur Ahrens, senior vice president of operations services at MasterCard in St. Louis.

"Even if I didn't save a dime on the new network, [the upgrade] was a smart thing to do because it gave me flexibility," Ahrens said.

By utilizing frame relay and Asynchronous Transfer Mode technologies from AT&T and its international partners, the network permits MasterCard to create virtual private network "paths" for its members.

Ahrens declined to quantify the project investment or anticipated cost savings. Octavio Marenzi, director of research at Meridien Research, Inc. in Needham, Mass., placed MasterCard's AT&T bill at "hundreds of millions of dollars" annually.

The network will be extended to Latin America, Asia-Pacific, the Middle East and Africa by the end of next year.

NET MIX

MasterCard's competitors currently use hybrid networks. Visa International, Inc. in San Mateo, Calif., uses a blend of X.25 and frame relay. American Express Corp. in New York mixes those technologies with point-to-point leased-line connections.

MasterCard's shift away from a capital-intensive network to a virtual network is the wave of the future, analysts said.

Catalog firms and retailers that historically did the bulk of their sales during the holiday period used to "rent" additional hardware to handle the extra transaction processing volumes, said Frank Dzubeck, president of Communication Network Architects in Washington.

Those upgrades are no longer needed now that bandwidth can be upgraded and downgraded when needed, Dzubeck said. "The old world was physical; the new world is virtual," he said.

And by having AT&T manage the network, MasterCard will be able to reduce its administrative costs.

Under the X.25 environment, MasterCard had to manage relationships with more than 50 carriers. □

SET DEVELOPMENTS

- IBM and VeriFone to work on product interoperability
- Developer's guide to be released by those vendors by next June
- SET backers to develop new compliance testing program

Vendors address SET product compatibility

By Sharon Machlis

JUST BECAUSE two products both meet Secure Electronic Transaction (SET) specifications doesn't mean they will actually work together.

That concern over potential product incompatibility could mean yet another holdup in SET's adoption, which is under development by major financial firms including Visa International, Inc. and MasterCard International, Inc. as a way to safely conduct credit-card transactions on the Internet.

"The biggest barrier to mass adoption of SET is interoperability," said Ann Culver, product manager at CompuServe Network Services in San Francisco.

GUIDELINES

In response, IBM and Hewlett-Packard Co. subsidiary VeriFone, Inc. last week said they launched a program to ensure that their products properly communicate with each other.

The companies also will publish a developers' interoperability guide by June.

Although SET lays out a technical framework, there are different ways of implementing a financial-transaction business model.

For example, one product could collect more information about a transaction than another; when they attempt to exchange information, the second product might not know how to handle the extra data.

"If your wallet doesn't talk to somebody else's merchant server ... you can't do anything," Culver said. Under SET, consumers would use an "electronic" wallet when making purchases on the World Wide Web.

David Marshak, an electronic-commerce specialist at Patricia Seybold Group in Boston, said he was encouraged that two major vendors decided to work together on compatibility, instead of vying to create their own versions of the standard. □

http://www.forte.com/cw

"We're Forté for the Web!"

Many companies are saying, "We're just like Forté, only for the Web." What they mean is that they're targeting scaleable, reliable, mission-critical applications for the Web. Trouble is, they're talking futures. Meanwhile, Forté customers have *already* developed and deployed robust, component-based Web applications today. Customers like-Eli Lilly, HOME Account Network, Mazda, TransCanada Pipelines, Banco do Boston and World Bank, to name just a few. So if you really want Forté power on the Web, the only place to get it is ... from Forté.

Click here to see what industry analysts say about Forté or to view our latest Web White Paper. Better yet, sign up for the next Forté seminar in a city near you. Or call 800-622-5076, today.

Because only Forté has what you need to develop enterprise Internet applications, today.

FORTÉ

www.forte.com/cw

This site is best viewed with Netscape Navigator. Download Netscape Now!

©1997 Forté Software, Inc. Forté is a registered trademark and Forté Application Environment and the Forté logo are trademarks of Forté Software, Inc. From outside the US call 510-869-3400. All other trademarks acknowledged. VRBA

IBM move will give users better handle on network computers

By April Jacobs

OBSERVERS SAY IBM's decision to open up its network computer management software to competitors could be a boon to users who want to manage multiple platforms under a single umbrella.

For example, Mike Prince, chief information officer at Burlington Coat Factory Warehouse, Inc. in Burlington, N.J., said he doesn't have an overall management platform for his 250 network computers but will need one if the company moves ahead with plans to put about 1,200 more network computers at its retail locations nationwide.

Prince uses network computers from Neoware Systems, Inc., formerly HDS Network Systems, in King of Prussia, Pa.

"Our ability to manage our [network computers] as we scale up will be more of an issue. We would welcome good management software, especially if the IBM pack does a good job," Prince said.

IBM's offering would be a breath of fresh air, observers said, because the market is devoid of comprehensive management packages. Software such as Computer Associates International, Inc.'s Unicenter works with Sun Microsystems, Inc.'s JavaStation and Neoware's NeoStation, but there is no wide-scale software in the network computer market that compares with software such as Hewlett-Packard Co.'s OpenView.

IBM offers a product called Network Station Manager free of charge with its Network Stations. The management software lets network administrators construct a user's privileges on the server as well as manage all user applications from the server. That cuts down on service calls and maintenance. The server-centric network computers require little troubleshooting because of their simplicity.

PARTNERING UP

Network Station Manager will be renamed Network Client Manager in its new format, an IBM spokesman said. IBM plans to partner with other network computer vendors to develop application programming interfaces for the software to work with multiple hardware platforms. Network Station Manager now runs on the AS/400, Windows NT servers and the RS/6000.

One of the first vendors to step forward to join IBM is Neoware, which is working with IBM to allow Network Client Manager to manage its NeoStation 500 and its upcoming NeoStation 200, which will be announced at Comdex/Fall '97.

IBM's server management software will give network computer users better tools to manage hardware and software under a single umbrella, said Neoware Executive Vice President Michael Kantrowitz. Vendor tools now manage only their own network computers.

Jane Wright, an analyst at Meta Group, Inc. in Stamford, Conn., said no other vendor has stepped forward with a server-based management tool to manage multiple platforms for network computers.

"The market is very open to this right now because server management tools in the [network computer] are even more important than in the PC environment because users are so dependent on the server to function," she explained. □

Comdex/Fall '97 attendees will be seeking ways to manage network computers running Java on multiple platforms

Comdex Snapshot

Source: Computerworld Marketview Survey

Handhelds feature bigger screens

By Kim Girard

A NEW GENERATION of heftier handhelds running Microsoft Corp.'s Windows CE 2.0 operating system will be featured at Comdex/Fall '97 this week in Las Vegas.

Hewlett-Packard Co., NEC Corp. and Casio Computer Co. are among the vendors expected this week to unveil machines that feature bigger screens and keyboards.

Those devices are expected to compete at the low end of the mininotebook market, but users and analysts say that is still a couple of years away.

"Eventually, this class of device will represent a large volume of notebooks sold," said Rob Enderle, an analyst at Giga Information Group, a Cambridge, Mass., consultancy.

But Enderle said vendors must first improve display and storage capabilities.

Indeed, many companies aren't ready to take the plunge.

"As a department, we're not supporting them in any way, shape or form," said Gary Coombs, systems manager at Scientific Atlanta, Inc. in Norcross, Ga., which has more than 5,000 employees and uses Dell Computer Corp. laptops.

"They've got a lot of work to do to get user acceptance," said Stanley Dobrowski, supervisor of data processing operations at Bergen County Utilities Authority in Little Ferry, N.J.

The HP 620LX features full-size output for PowerPoint

Dobrowski said he will stick with his DOS-based HP handheld for now because programming is much simpler than with a Windows CE device. And hanging a larger CE device off his belt would be inconvenient, he said.

One user said he is awaiting an upgrade to Window CE 2.0 but is frustrated by the lack of applications for his HP 320LX.

"One of my pet peeves, where Microsoft needs to get on the stick, is to be more aggressive with software applications," said Robert Kreisler, president of Enterprise Marketing Solutions, a consultancy in Washington Township, N.J., and a member of the New York HP Handheld Users Group.

The lure for users is that the CE devices can handle electronic mail, scheduling and simple document making. They also can be used to synchronize with desktop programs, including Microsoft's Outlook, Word and Excel.

And the latest models, with their color screens and faster processors, are expected to rival Intel Corp.-based mininotebooks — such as Toshiba America Information Systems, Inc.'s Libretto — in performance, but at a much cheaper price.

The HP 620LX costs less than $1,000, features 16M bytes of RAM, a full-color display and full-size output for PowerPoint presentations. □

Spotlight shines on speech recognition

By Gordon Mah Ung

IF 1997 IS THE year of World Wide Web-enabled software, 1998 will be the year of speech recognition-enabled software, some industry observers said.

Everything from electronic-mail clients to browsers now feature or will feature some form of speech recognition in the upcoming year. Voice recognition and text-to-speech systems are expected to be one of the highlighted technologies at this week's Comdex/Fall '97 show in Las Vegas.

But are advances in speech-to-text and continuous speech recognition dictation likely to become ubiquitous on corporate desktops anytime soon?

Probably not, industry observers said. With half of corporate desktops still running Windows 3.x and 16-bit applications, the horsepower just isn't there for everybody.

"My guess is when [large corporations] have the hardware to do Windows 98 or NT, that they will then be in a position to use voice if they want to," said Amy Wohl, editor of the computer industry newsletter "TrendsLetter" in Narberth, Pa. Wohl is preparing to release a white paper on speech recognition systems.

Minimum requirement of most continuous speech products: A 166-MHz Pentium with 32M bytes of RAM. Analysts believe 50% of corporate desktops still have only enough power to run Microsoft Windows 3.1.

Corporations already are adding the infrastructure. International Data Corp. in Framingham, Mass., said the average machine being purchased by companies now has a 200-MHz Intel Corp. Pentium MMX with 32M bytes of RAM.

"I wouldn't be surprised in two years if we don't use it to supplement things in transcriptions," said Arich Hennemen, manager of computer services at Valley Care Health Systems in Livermore, Calif. Hennemen said the company considers voice recognition systems almost every year. The technology itself has matured much in five years. "We haven't bitten yet, but we're keeping an eye out," he said.

Betting on voice, Lotus Development Corp. in Cambridge, Mass., recently bundled parent company IBM's ViaVoice with Lotus SmartSuite 97 and integrated it with the suite's word processor, WordPro 97.

Lotus is considering extending the voice capabilities to other areas, including letting users control the computer by voice, not just dictate into the word processor, said Penny Scharfman, a Lotus senior marketing manager. Continuous speech recognition has sparked interest in the suite, she said.

Microsoft Corp. also isn't taking voice lightly. In September, Microsoft CEO Bill Gates announced the company had invested $45 million to buy an 18% stake in Lernhout & Hauspie Speech Products. Microsoft is hard at work on natural language processing, an important component of voice recognition.

And a spokeswoman at Corel Corp. said the Ottawa company is looking at ways to embed speech technology in its WordPerfect Office suite. □

There Are A Million Reasons To Develop For The Unicenter TNG

Unicenter TNG Is The Industry Standard For Network And Systems Management.

When you develop for Unicenter® TNG™, you're writing for one of the most popular and productive platforms in the industry. Unicenter® has been publicly endorsed by virtually every major hardware and software company, including Microsoft, Sun, SAP, Intel, HP, DIGITAL, Tandem, NCR, Fujitsu, Data General, Cisco, Sequent, SGI, SCO, and Unisys.

Who Can Enter?

Whether you are an employee of an ISV, a CA Business Partner, or CA client, or a consultant working from your home—in other words, no matter who you are (except CA employees and their families of course), you're welcome to enter.

$1,000,000 In Cash Prizes!

Imagine winning hundreds of thousands of dollars in cash—simply for doing what you love! Here's a rare chance to show off your developer skills while taking a shot at the largest cash award jackpot the industry has ever seen.

If you win, not only will you take home a very large cash award, you'll also earn industry-wide recognition as one of the best developers around.

The Unic

ACHIEVEM

It's Quick And Easy To Develop Winning Unicenter TNG Solutions.

The Unicenter® TNG™ Framework™ can save you years of development time. It provides an instant foundation for virtually any kind of application you need to develop, complete with the common services your applications need.

When you enter the Unicenter TNG Developer Contest, you can request a *free* Unicenter TNG Framework CD and a *free* Unicenter TNG Software Development Kit (SDK). Use them to develop your winning entry! No software purchase is required. Of course, if you are already a Unicenter TNG client, you can develop your entry with the product.

COMPUTER® ASSOCIATES

Software superior by design.

Reasons To Enter Developer Contest.

1. Best Use of
2. Best IT Intelligent
3. Best Non-Computing
4. Best Application Agent
5. Best Network Device Agent
6. Best Security Agent Developed for
7. Most Effective Use of Unicenter TNG
8. Most Socially Responsive Application of
9. Most Creative Application of Unicenter TNG
10. Greatest Competitive Advantage Derived by Implementing Unicenter TNG

GRAND PRIZE WINNER

One Million Dollars In Total Cash Prizes!

enter TNG

E N T A W A R D S

Gold, Silver And Bronze Winners Will Be Chosen For Each Category.

That gives you three chances to win in every category!

A distinguished group of industry experts will judge all entries and choose the winners. The Grand Prize Winner with the best application overall will receive a prize of $100,000 cash at CA-World 1998 in New Orleans. The contest deadline is March 16.

Enter As Often As You Like In One Or All Ten Categories.

Take a look at the ten Unicenter TNG Development categories and you'll be sure to find one that's perfect for you. Are you a security expert? An Internet addict? A specialist in intelligent agents? Here's an opportunity to cash in on all of your expertise and professional experience. Turn your career knowledge into cash.

Or perhaps you have a new idea that's totally outside of what you do 9–5. Maybe it's something you've always wanted to write. Something very different than your traditional IT applications. Or even something that makes the world a little bit better place. No matter what kind of application or agent you want to create, this contest gives you a chance to do what you do best—and get paid handsomely for it!

For A 1998 Entry Application, Visit www.cai.com/award.

Unicenter TNG™

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000
All other product names referenced herein are trademarks of their respective companies
For complete contest rules, please visit our Web site at www.cai.com/award.

Database makers slow to move objects

By Craig Stedman

MAJOR DATABASE vendors aren't exactly putting the pedal to the metal to deliver promised object technology.

Nearly five months after shipping its Oracle8 database, Oracle Corp. is just starting to beta-test development tools that are supposed to make it less painful for users to take advantage of the software's built-in object capabilities.

Meanwhile, Computer Associates International, Inc. delayed shipments of its new Jasmine object database for a third time after the product flunked quality tests last month, officials confirmed.

And Informix Software, Inc. is still fine-tuning a Windows NT version of its object-enabled Universal Server database that was originally due out in June (see box).

The slow progress doesn't appear to be causing widespread headaches, because most mainstream applications still are centered on relational databases.

But some database users want to start getting their feet wet with objects.

For example, Jim Scott, financial applications manager at Comcast Cable Communications, Inc. in Philadelphia, said he is trying to get a test copy of Oracle's Object Database Designer tool for Oracle8 so he can begin experimenting with the technology.

OBJECT SHOWDOWN

Vendor	Product
Oracle	Oracle8 object modeling tool due in Q1 1998
CA	Jasmine object database delayed until December
Informix	Universal Server database for Windows NT to ship by year's end

The ability to turn business processes into reusable software objects could make application development much faster, especially as Comcast converts client/server systems to the World Wide Web, Scott said.

But "cranking out a bunch of SQL code" to create database objects isn't very appealing, he added.

For now, users who want to build Oracle8 objects have to do hard labor to manually write SQL and C++ code, conceded officials at Oracle in Redwood Shores, Calif.

Object Database Designer, which is due early next year, will change that by providing a visual modeling tool with a built-in C++ generator, an object repository and support for converting relational data designs to object form.

BABY STEPS

But Oracle is still just "taking some baby steps" toward full object support, said Anthony Bradley, an analyst at Meta Group, Inc. in Stamford, Conn. Object Database Designer doesn't link up with business process modelers and application tools, and even Oracle8 itself has limited object capabilities, he said.

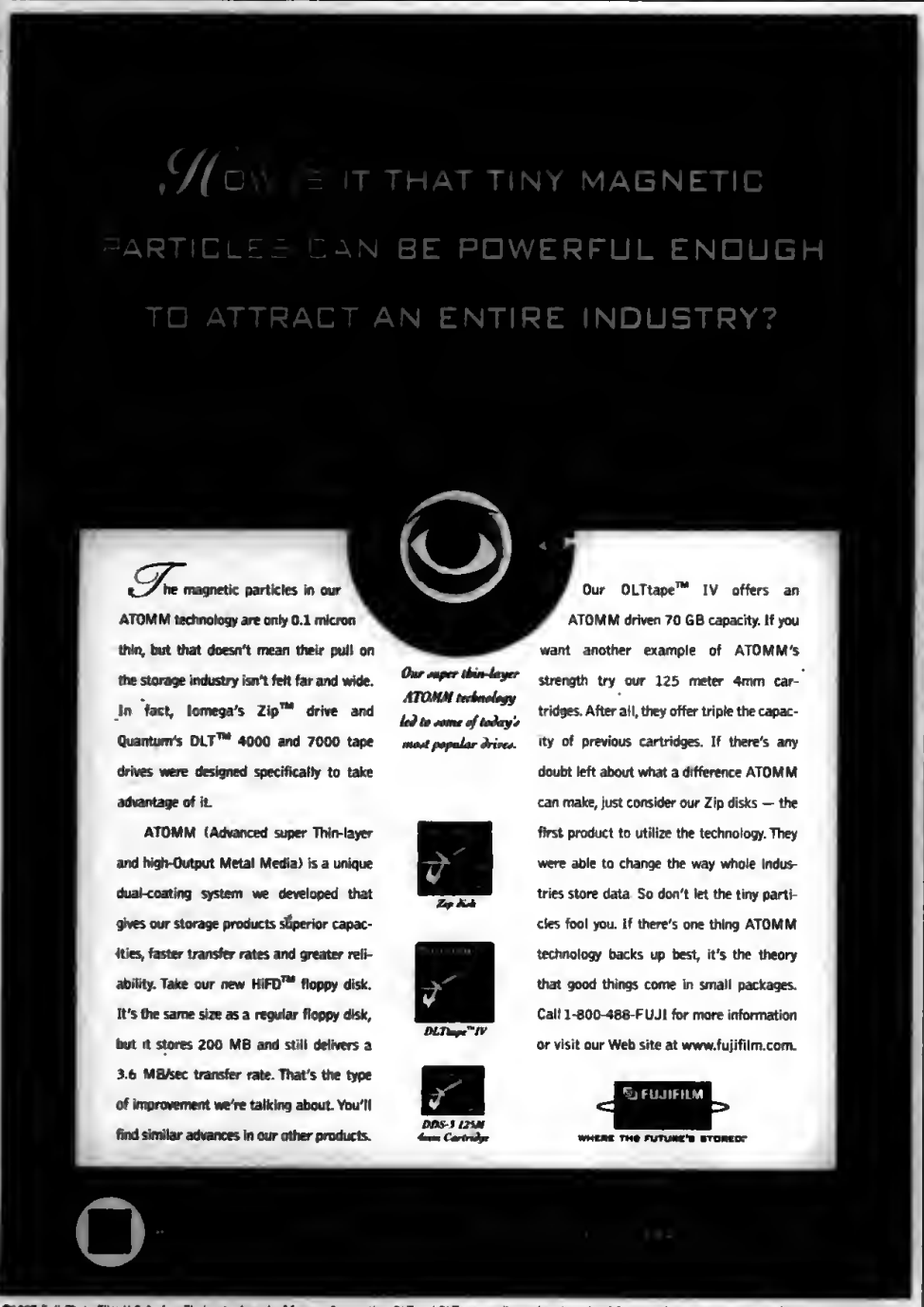
CA, in Islandia, N.Y., is now targeting December for the release of Jasmine.

The software, a pure object database aimed at multimedia and World Wide Web applications, has slipped a full year behind CA's original shipment date of late 1996.

"If it got delayed too much longer, that could set back some implementation schedules for us," said Dave Nahmias, manager of product marketing at Template Software, Inc., a Dulles, Va., vendor that plans to use Jasmine in object applications it designs for customers.

But Jasmine's programming environment is solid, which lets application development proceed, Nahmias said.

Jasmine should speed up development and application performance compared with mapping objects into relational databases, he said. □



©1997 Fuji Photo Film U.S.A., Inc. Zip is a trademark of Iomega Corporation. DLT and DLTtape are licensed trademarks of Quantum Corporation. Where the future's stored is a trademark of Fuji Photo Film U.S.A., Inc. HiFD is a trademark of Sony Corporation.

THE MARINES. THE GREEN BERETS. THE NAVY SEALS.

Welcome to reseller boot camp: The Sun Competency Certification Program—a proving ground from which a handful of value-added resellers will graduate. Trained in Sun™ products, consulting and interoperability, as well as the latest Java™ technologies, they're certified in everything from Enterprise, Workgroup and Specialty categories to service and support. Simply put, they're the ones the tabloids call when the big MIS scandal breaks. Sure, there are easier ways to become a reseller. There are also bargain parachutes. The bottom line is that when you see the Sun seal of approval hanging on the wall, your rip cord worries will evaporate like software titles for the Commodore 64.

Sun microsystems

Just look for the certification logo, and walk on in. Left-left-left-right-left. THE NETWORK IS THE COMPUTER.™

NOW LET'S TALK ABOUT A PROGRAM THAT'S TOUGH TO GET INTO.

©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, Java and The Network Is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. www.sun.com

intel
inside
pentium II

CA and Tivoli: Same goal, different approaches

By Patrick Dryden

BY DIFFERENT PATHS, rivals Computer Associates International, Inc. and Tivoli Systems, Inc. are taking their enterprise management tool kits where their users want to go.

CA recently launched a focused development partnership that demonstrates how its control over the Unicenter TNG software soon will add specific new capabilities to the suite

Tivoli last week hosted another conference for hundreds of developers and integrators and demonstrated how its open standards approach is slowly building an industry for tools and support around its TME 10 framework

Either way, the long-term goal is efficient maintenance of complex information systems through the integration of network, systems and application management tasks.

IS managers seek central control, automation and a business-eye view of far-flung components. But some managers want one vendor to handle all development, support and integration; others want to pick the best tool for each job, yet get them all to work together

"We prefer to see new support show up within Unicenter TNG so we don't have to evaluate and integrate point tools and train our staff on each one," said Roger Einbecker, assistant vice president of technical shared services at Allstate Insurance Co. in Northbrook, Ill. Allstate plans to help test agent software and performance monitors it expects to need someday for massively parallel systems, clustered servers and Asynchronous Transfer Mode (ATM) backbones

CA is developing those enhancements with one of the few users that requires such support right now — the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign.

Some managers want one vendor to handle all development, support and integration. Others want to pick the best tool for each job, yet get them all to work together.

Corporations won't need to monitor such powerful systems and high-speed networks for years, said Larry Smarr, NCSA director.

Even so, within six months the basic Unicenter TNG suite should be able to support new interfaces, network architectures such as ATM and enhanced performance trending, said Marc Sokol, senior vice president of advanced technology at CA in Islandia, N.Y.

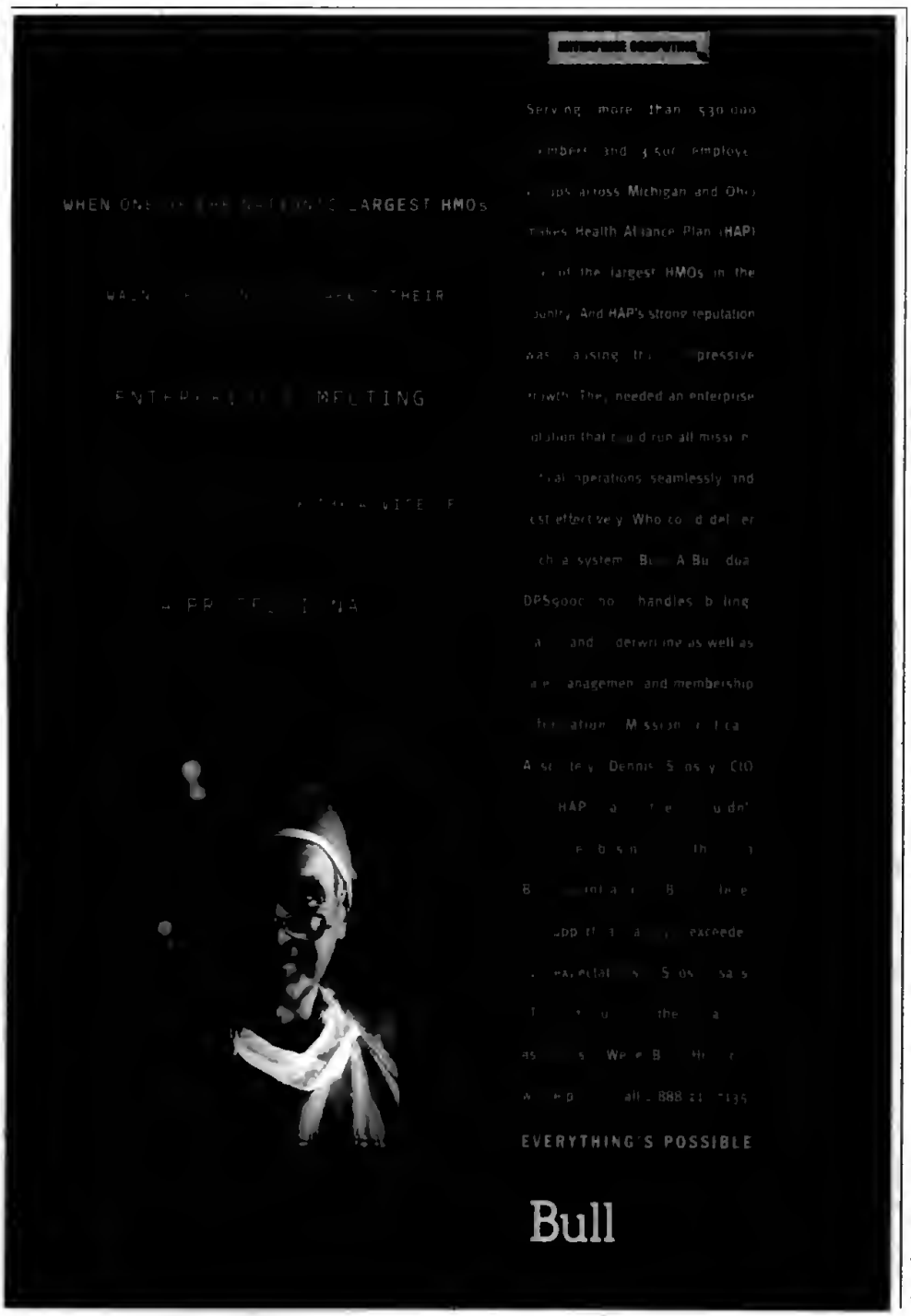
While a tightly integrated suite supplied and supported by a single vendor attracts some IS managers, others demand the flexibility to choose their tools.

"TME 10 doesn't lock us in to anything," said Don Whitfield, an IS vice president at NationsBank Corp. in Charlotte, N.C. No vendor can intimately understand every kind of hardware, operating system and application throughout the banking chain, he said. And support groups that are used to certain tools couldn't change overnight, he said.

Those users prefer Tivoli's approach. Tivoli invests 15% of expenses to help nurture, certify and promote tools and services from partners.

Management working groups gather competing vendors to define standard interfaces for the TME 10 environment so any vendor's tool can work with others in the open framework. The latest, a scheduling interface, should boost interoperability between workload management and systems management applications.

The number of tools that can plug in to TME 10 hasn't increased much in the past year, but the quality of integration has. □



©1997 InterSystems Corporation. InterSystems Caché is a trademark of InterSystems Corporation. Other product names are trademarks of their respective vendors.

RDBMS had a good run.

Your relational database once ran well, but now you frequently encounter the demons of technological obsolescence. However, relief is in sight. You can now develop transactional applications without the limitations of relational technology. With Caché, the post-relational database, from InterSystems. Caché provides the performance and scalability needed for complex transaction processing. Unlike "object-relational" products that layer objects onto a relational database engine, Caché incorporates a lightning-fast *transactional multidimensional data model* and advanced object technology. In addition, even in backward compatibility mode with SQL for legacy applications, Caché achieves a several-fold improvement in performance and scalability. Now is the time for Caché, the post-relational database, available for GUI and Web-based applications on Windows 95 and NT, OpenVMS, and major UNIX platforms. Call us at (617) 621-0600, or visit our website at www.intersys.com.

CACHÉ™
InterSystems

Post-Relational Database.
New Dimensions of Transactional Performance.

Your hardware should work harder.

80% of PCs shipping today have 32 megs of RAM or more.
So if you're like most companies, your standard-issue PC—the one you'd put on the desk of any new employee—is plenty capable of running Microsoft® Windows NT® Workstation.
It would, in fact, perform better.
It would be more reliable.
More secure.
And faster.
Just so long as it's running Windows NT Workstation.

So, is it?

Windows NT Workstation fits into your existing environment and works with the standard applications and peripherals you already have. So it's easy to see why Windows NT Workstation has become the compelling choice for every new desktop in your organization.
To evaluate your current mix, visit us online.

It's time for that standard-issue PC to start living up to its potential.

©1997 Microsoft Corporation. All rights reserved. Microsoft, Where do you want to go today?, the Windows logo and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Claim regarding the percentage of 32-meg business machines shipping today is supported by studies from Mercury Research.

Windows NT®
Workstation 4.0

www.microsoft.com/windows/nt_workstation/ Where do you want to go today?® Microsoft®

Adminstrators hold the key

▶ Users find NT security to be strong, but implementation can be tricky

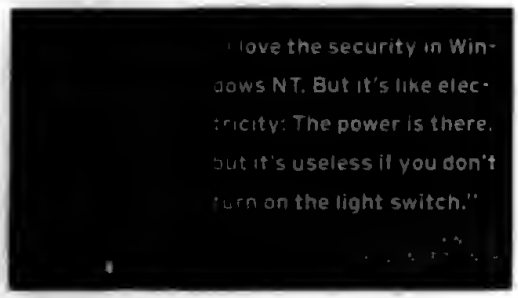
By Laura DiDio

EVEN THOUGH Microsoft Corp.'a baseline security architecture in Windows NT is considered to be inherently strong, it is only as good as the administrators who secure a network.

Implementation can be a challenge for inexperienced administrators, but poor planning and user errors still account for many network security breaches, said users and security specialists.

"I love the security in Windows NT. But it'a like electricity: The power is there, but it's useless if you don't turn on the light switch," said Dean Johnson, senior technical specialist at Freudenberg-NOK General Partnership in Bristol, N.H. "You have to know what you're doing. Windows NT has a lot of depth, and we don't know enough yet about all of its internal quirks to make it bulletproof, so we brought in outside consultants to help out."

Sentiments such as that are good news for Microsoft, which increasingly seeks to move users off 16-bit platforms to the 32-bit NT, while also wooing enterprise users. For example, Microsoft CEO Bill Gates will team up with Digital Equipment Corp.'a Robert Palmer at a Dec. a press conference on NT and the enterprise.



GOOD REVIEWS

Overall, one dozen Fortune 1,000 businesses and three security analysts said NT security compares favorably with competing operating systems such as Unix, Novell, Inc.'s IntranetWare and IBM's OS/2 Warp Server. But no operating system offers the near-impregnable level of security of mainframe operating systems such as IBM'a MVS, they said.

Despite potential potholes, there isn't a smoking gun that will singularly take down a Windows NT network, the users said. Internet Security Systems, Inc.'s (ISS) Net/Xforce in Atlanta — which ferrets out and publicizes security holes and fixes for a variety of operating systems — so far this year has uncovered 17 Windows NT security issues that it rated as highly vulnerable.

"That's pretty low," said David LeBlanc, ISS'a senior Windows NT security engineer. "We get a daily flood of Unix holes."

In fact, said Jerold Shulman, president of JSI, Inc. in Alpharetta, Ga., "with the proper policies, you can lock down Windows NT tight as a drum." JSI is a reseller that also has a World Wide Web page devoted to the latest Windows NT hacks and solutions: *www.jsiinc.com*.

Still, users said they must constantly dodge potential lethal bullets that are being fired by a more active Windows NT hacker community that wants to invade their networks via a variety of known and as-yet-unknown security holes.

The biggest downside to NT security, users said, is its vulnerability across a wide-area network. "So far, we've managed to avoid taking a major, direct security hit. But we don't use Windows NT Internet Information Seiver (IIS), which is a big entry point for hackers," said Kurt Guerrero, a senior LAN architect at Northern Trust Co. in Chicago.

But at some shops, the potential for remote access hacker invasions is a constant threat.

Jeff Dazell, LAN network services administrator at Dana Corp. in Toledo, Ohio, which has 45,000 Windows NT users, said he is concerned that a remote user will inadvertently wreak havoc on his NT networks because of the well-publicized gaps in Microsoft'a Internet Explorer 4.0 and IIS.

"My worst nightmare is that a user will install an unauthorized modem on his desktop or home PC and configure it for remote access. That opens a back door in Windows NTand lets hackers circumvent my proxy server and firewall security as effectively as the Germans sidestepped France's supposedly impenetrable Maginot Line in World War II," Dazell said.

TOO EASY

Paradoxically, one of Windows NT'a greatest atrengths — its ease of use and installation — is also one of its greatest security drawbacks.

"Windows NT comes out of the box in a completely trusting and open manner. The onus is on the network administrator to enable the security mechanisms," said John Pescatore, a principal at Trusted Information Systems, Inc. in Rockville, Md.

On the plus side, the Access Conttol Lists in Windowa NT are "very good and the fundamental security structure is very strong and flexible," LeBlanc said.

Shulman actively checks and tests each confirmed security bug as it is discovered by legitimate organizations. Once these companies notify Microsoft, the Redmond, Waah., company usually posts a hot fix on its Web site within 24 to 72 hours, said Karan Khanna, a Microsoft security product manager.

LeBlanc said there are no silver bullets that provide 100% security on Windows NT or any network . operating system. "Windows NT security is only aa good as the person administering it. My best advice is get educated and stay informed," he said.□

Batten the hatches

Companies often "victimize themselves" by failing to close the most obvious openings in Windows NT, said Jim Marshall, an information delivery security consultant at The Dow Chemical Co. in Midland, Mich. He advised his fellow users to do the following:

- Disable the Guest account immediately.
- Rename the Administrator account.
- Allow administrative access by local log-on only.
- Remove the "Everyone" group from directories.
- Teach users what makes a good password.
- Store files in a secure directory, not on publicly shared areas such as public directories.

— Laura DiDio

Product manager says best defense is common sense

By Laura DiDio

THERE IS NO such thing as a 100% secure operating system environment — but you can come close.

Common sense is one of the best weapons in the security war, said Karan Khanna, a Microsoft Corp. security product manager who offered the following tips for NT users:

- Install the latest service packs and hot fixes on sensitive machines (domain controllers).
- Review and follow the recommendations in "Guidelines for Securing Windows NT" (*www.microsoft.com/security/*).
- Enforce a strong password policy in your domain using the passfilt.dll dynamic link library.
- Ensure that you have an appropriate level of physical security. For example, restrict the boot process by disabling a floppy disk boot or by using a power-on password.
- Periodically do "outside-in" network penetration testing. Keep an eye out for open ports, unneeded processes and default account/passwords.
- Turn on auditing for sensitive resources and files, and review audit logs regularly to identify and flag abnormal patterns.
- Businesses with very high security needs should consider using add-on hardware devices such as Security Dynamics, Inc.'s SecureID cards or Sony Corp.'s FIU FIS-002 secure log-on for NT, which authenticates fingerprints.
- Put restrictive access control on sensitive resources — for example, registry keys.
- Use a Windows NT System Startup Key to strongly encrypt on-disk and backup copies of passwords.□

A recent survey shows that nearly 50% of businesses experienced attacks on their networks within the past year. The survey also shows the following:

41%	had losses of more than $500,000 for each intrusion
35%	had losses that cost more than $1 million per security attack
58%	said their networks were hacked by outsiders
61%	said their networks were hacked by company insiders
27%	doubted their organizations had the ability to detect illicit hacks

Base: 210 Fortune 1,000 businesses

Source: WarRoom Research LLC, Baltimore

RELATED LINKS

There's a wealth of information on baseline Windows NT security, issues and fixes available on the Web. Among the most frequently accessed sites:

www.microsoft.com/security/
www.iss.net/vd/ntsec.html
www.ntsecurity.net

For these and other related links, point your browser at: *www.computerworld.com/links/ntsecuritylinks.html*

SO, YOU WERE WAITING UNTIL 1998 TO UPGRADE TO WINDOWS NT® WORKSTATION?

The new HP Vectra VL
WITH MICROSOFT® WINDOWS NT WORKSTATION.
IT'S THE FASTEST HP VECTRA PC EVER

intel inside
pentium® II

HAPPY NEW YEAR

THE NEW HP VECTRA VL PC

- 300 MHz Pentium II processor that features MMX™ technology
- 32MB or 64MB RAM
- 4.0GB or 6.4GB hard drive
- Windows NT® 4.0 Workstation
- 10/100BT LAN
- Available in minitower or desktop
- Corporate volume price starting at $2,383*

The best way to take full advantage of the new HP Vectra VL with the 300 MHz Intel® Pentium® II processor is with Windows NT. The Vectra VL and Windows NT make one of the fastest, most reliable, most manageable and most secure PC desktop solutions you can provide for your workers.

For more information, go to *www.hp.com/go/vectra*

HEWLETT® PACKARD

*Corporate Buying Program price based on volume purchase of 300 units or more. Discounts on volume purchases may not be combined with any other promotion. Must take delivery within 90 days. Discount offer valid until 11/30/97 or while supplies last. Monitor not included. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Microsoft and Windows NT are U.S. registered trademarks of Microsoft Corp. ©1997 Hewlett-Packard Company PP0499

BY PRICING OUR 4-WAY SERVERS FROM $12,999, WE AREN'T LAUNCHING A SALE.

WE'RE LAUNCHING A CRUSADE.

This device is subject to verification to the FCC Class A radio frequency emission standards. It is not, and may not be, offered for sale or lease for use in a residential environment.

★Prices and specifications valid in the U.S. only and subject to change without notice. †For a complete copy of our limited warranties, please write Dell USA L.P., One Dell Way, Round Rock, TX 78682, Attn: Warranties. ††IDC Quarterly Market Tracker, Q297. BusinessCare is a service mark of Dell Computer Corporation. ‡On-site service provided by third-party providers and may not be available in certain remote areas. 3Com and EtherLink are registered trademarks of 3Com Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Windows and Windows NT are registered trademarks of Microsoft Corp. ©1997 Dell Computer Corp. All rights reserved. ΔBoth 6100 systems must have minimum configuration of Dual 200 MHz/512KB Cache Processors, 256MB ECC Memory, (3) 9GB HDs and RAID. Limited time offer.

It may sound trite, but we're fighting for you. To put an end to the prices that most customers are paying for high-end systems. Our ammunition? The Dell™ PowerEdge™ 6100 Pentium® Pro processor server. A high-end SMP server for $12,999 that has four Pentium Pro processors, redundant hot-pluggable cooling fans, hot-pluggable hard-drive bays and ECC Memory. Need more? For an additional charge you can bolster your PowerEdge 6100 with an expandable RAID controller, redundant, hot-pluggable power supplies, redundant NICs and Automatic Server Recovery. And now for another weapon in our arsenal: exceptional service. We offer the BusinessCare™ 4-hour On-site* response option, standard Next-Business-Day On-site Service and 24x7 telephone support lines. And being one of the leading price/performance systems in the server category has helped make us the fastest growing major server manufacturer around.* Did we mention we also have key relationships with some of the major players in the industry like Microsoft, Intel, Oracle and Informix? Support a winning cause. Give us a call or visit our website.

ENTERPRISE SERVER

- 200MHz Pentium® Pro Processor
- 64MB EDO ECC Memory
- 512KB Integrated L2 Cache
- Dual Integrated PCI Ultra/Wide SCSI-3 Controllers
- 4GB Ultra/Wide SCSI-3 Hard Drive
- 24X Max/12X Min Variable SCSI CD-ROM Drive
- Intel Pro/100B PCI Ethernet Adapter
- Intel LANDesk® Server Manager v2.52
- 10 Drive Bays: 6 Hard Drive, 4 Removable Media
- 10 Expansion Slots: 6 PCI, 4 EISA
- 3 Years NBD On-site* Service
- 1 Year DirectLine℠ NOS Support
- 7x24 Dedicated Server Hardware Technical Telephone Support

$7499

Order Code: 200268

ENTERPRISE SERVER

- 4x200MHz Pentium Pro Processors
- 128MB EDO ECC Memory
- 512KB Integrated L2 Cache per Processor
- Dual Integrated PCI Ultra/Wide SCSI-3 Controllers
- 9GB Ultra/Wide SCSI-3 Hard Drive
- Dual Peer PCI Bus
- 24X Max/12X Min Variable SCSI CD-ROM Drive
- Intel Pro/100B PCI Ethernet Adapter
- Intel LANDesk Server Manager v2.52
- 10 Drive Bays: 6 Hard Drive, 4 Removable Media
- 10 Expansion Slots: 6 PCI, 4 EISA
- 3 Years of NBD On-site* Service
- 1 Year DirectLine NOS Support
- 7x24 Dedicated Server Hardware Technical Telephone Support

$12,999

Order Code: 200319

ENTERPRISE SERVER

- 4x200MHz Pentium Pro Processors
- 256MB EDO ECC Memory
- 1MB Integrated L2 Cache per Processor
- Dual Integrated PCI Ultra/Wide SCSI-3 Controllers
- 3x9GB Ultra/Wide SCSI-3 Hard Drives
- Dual Peer PCI Bus
- 24X Max/12X Min Variable SCSI CD-ROM Drive
- PowerEdge Expandable RAID Controller
- Intel Pro/100B PCI Ethernet Adapter
- Intel LANDesk Server Manager v2.52
- Redundant Hot-Pluggable Power Supplies
- 10 Drive Bays: 6 Hard Drive, 4 Removable Media
- 10 Expansion Slots: 6 PCI, 4 EISA
- 3 Years of NBD On-site* Service
- 1 Year DirectLine NOS Support
- 7x24 Dedicated Server Hardware Technical Telephone Support

$27,199

Order Code: 200313

BUY TWO QUALIFYING POWEREDGE 6100'S AND GET A POWEREDGE RACK FREE. CALL YOUR SALES REP FOR DETAILS.‡

TO ORDER TOLL-FREE

800-822-1606

TO ORDER ONLINE

www.dell.com

Mon-Fri 7am-9pm CT
Sat 10am-6pm CT
Sun 12pm-5pm CT
In Canada, call 800-839-0148

Keycode #61005

DELL

www.dell.com

MultiSync is a registered trademark and A500, A700, E500, E700, E1100, CromaClear, OSM and "Expect more. Experience more." mark and icon are trademarks of NEC Technologies, Inc. All other trademarks or registered trademarks are the property of their respective holders. ©1997 NEC Technologies, Inc.

A TEACHER DISCOVERED *that Christian would respond to images from his life. She put visual cues to the story of his new puppy on a special keyboard.*

THE MONITOR BECAME HIS VOICE. *With it he makes class reports and conversation. And keeps up with his class in the regular Osterville, MA public school system.*

WITH THE PICTURES, HE MAKES SENTENCES. WITH THE SENTENCES, HE MAKES FRIENDS. *Christian's monitor is the window between his non-verbal world and the speaking world of his friends. Through it, he teaches them many things.*

Christian Murphy was non-verbal. He lived with a wall between himself and the world.

THIS IS CHRISTIAN. *He was born with autistic tendencies that cut him off from the world around him.*

Until he found this window.

THE MONITORS THAT ARE BEST FOR CHRISTIAN'S NEEDS *can also speak to yours. Introducing the NEC MultiSync® performance-driven Enterprise and value-oriented Advanced Series monitors. They feature superior, lifelike images. And the kind of flexibility that super high resolutions and refresh rates ensure.*

To that end, OSM™ (On-Screen Manager) controls make image adjustments easy. Plus, select Enterprise monitors feature CromaClear™ CRT technology, for unparalleled focus, contrast and intense color saturation.

And, of course, the industry-leading NEC warranty includes 3 years parts, labor and CRT.

For more information call 1-800-NEC-INFO or visit www.nec.com.

MULTISYNC® MONITORS

	Max Res	Bandwidth	CRT Type	Pitch
A500	1280 x 1024 @ 60Hz	112MHz	Dot Trio	0.28mm dot
A700	1280 x 1024 @ 65Hz	119MHz	Dot Trio	0.28mm dot
E500	1280 x 1024 @ 65Hz	119MHz	CromaClear	0.25mm mask
E700	1600 x 1200 @ 65Hz	177MHz	CromaClear	0.25mm mask
E1100	1600 x 1200 @ 65Hz	177MHz	Dot Trio	0.28mm dot

Expect more. Experience more.

NEC

Computer Industry

MCI/WorldCom megamerger poses challenge to AT&T

▶ *Lower costs, more bandwidth key to users*

By Matt Hamblen

USERS EXPECT last week's $37 billion merger agreement between MCI Communications Corp. and WorldCom, Inc. to result in a strong competitor to AT&T Corp. for voice and data services.

"It's great for a new dog to stand up on his hind legs and spit in the eye of the giant," said Jack Reed, a systems engineer at Grumman Systems Support Corp. in Longmont, Colo.

Reed said he uses Sprint Corp. in Kansas City, Mo., and AT&T in Basking Ridge, N.J. for services. And although he has no major complaints, he said he was glad to hear that another powerful player could be bidding for his business.

"I'm in favor of competition, and the merger mania should increase that," Reed said. "You can get too much market power just like IBM once did or now like Microsoft."

WorldCom's Bernard Ebbers (left) becomes CEO of the new company, and MCI's Bert Roberts becomes chairman

Other users said they want increased bandwidth from carriers at the same — or even lower — costs, and they believe the megamerger could help them.

Also key is one-stop shopping. Users said they want one carrier to provide all services for them.

"I look for a reliable network, and I look for a great price," said Christine Sostack, telecommunications manager at Comstock, Inc. in New York. "If they can't compete on everything, I'll go elsewhere."

CATCHING AT&T

Analyst Dan Taylor at Aberdeen Group, Inc. in Boston said the combined entity — to be called MCI WorldCom — should have $30 billion in revenue next year. "That would make them really the closest entity we have known to be able to touch AT&T," which has annual revenue of more than $50 billion, he said.

"AT&T has really been the only company that could do everything for you," Taylor said, with a wide range of enterprise applications for local and long-distance connections and network services such as frame relay and Asynchronous Transfer Mode.

Analyst Tom Nolle, president of CIMI Corp. in Voorhees, N.J., predicted that the combined infrastructures could make MCI WorldCom an "Internet powerhouse."

WorldCom is based in Jackson, Miss., and MCI is based in Washington. □

FAQs: It's WorldCom after all

Q: What are the key terms of the MCI/WorldCom merger?
A: WorldCom will give MCI stockholders $51 of WorldCom stock for each MCI share, up from $41.50 announced in October. WorldCom CEO Bernard Ebbers will become CEO of the new company, and MCI Chairman Bert Roberts will become chairman.

Q: What about bidders GTE Corp. and British Telecommunications PLC?
A: GTE wasn't ready to up its $40-per-share cash offer. BT will be given $7.4 billion to dissolve its 20% stake in MCI.

Q: Will the deal get approved?
A: Both companies are confident they will win regulatory and shareholder approval in six to nine months, although legal analysts are more skeptical.

Apple to sell direct with online store; users wary

By Kim Girard and Wylie Wong

APPLE COMPUTER, INC. tried to boost its business last week by opening an online store and offering users build-to-order computers, but analysts said it may be too late to turn the struggling computer maker around.

"Bottom line: This doesn't save Apple," said Eric Lewis, an analyst at International Data Corp. in Framingham, Mass. "They're doing a lot of the right things, but they're not doing enough yet."

Amid much fanfare, Apple interim CEO Steve Jobs last Monday announced the Apple Store, a strategy to boost Apple sales by selling direct to customers. Apple could use the boost; it now holds about 3.3% of the U.S. PC market, a share that has dramatically slipped from 7.9% in 1995 and 5.2% in 1996, according to International Data Corp. in Framingham, Mass.

But Jobs offered no update on the search for a new Apple CEO. Nor did he discuss the Cupertino, Calif., company's plan to build network computers. Zeroing in on the Internet commerce venture, Jobs took a shot at Dell Computer Corp. CEO Michael Dell, who recently suggested Apple shut down and return money to its shareholders.

"With our new products and new store and our new build-to-order manufacturing, we're coming after you, buddy," Jobs said.

Analysts called Jobs' reaction showmanship and noted that Dell, which sells Windows machines and competes in a completely different market, already makes 15% of its sales online.

PROFIT PERCENTAGE

As of last Tuesday, Apple claimed that there had been 4.4 million hits on its new World Wide Web site (*www.store.apple.com*) after its first day and $500,000 in orders after just 12 hours of operation.

"One way this helps is [Apple] is able to keep a larger percent of the profit" by eliminating the middleman, said Lisa Yee, a systems manager at San Francisco-based law firm Jones Hall, Hill & White. But Lee said it is unlikely she will buy Apple computers online. She said she buys some software on the Web but buys hardware from a retailer because it is less expensive.

But some users will prefer buying directly from Apple for the comfort factor, despite the fact that resellers can still cut the price of an Apple computer sold online by as much as $500, analysts said. □

Microsoft strikes back at legal attackers

By Carol Sliwa

MICROSOFT CORP. may prefer to see the spotlight fall on its products, but these days the beam has been shining on its legal woes at the state and federal levels.

On the federal side, the U.S. Department of Justice remains hot on Microsoft's trail. The company last week filed a 48-page formal response to the Justice Department's complaint, which charges Microsoft with violating a 1995 court order that bars the software maker from imposing anticompetitive licensing terms on PC makers.

Calling the Justice Department's claims "baseless" and its reading of the consent decree "implausible," Microsoft said the complaint is "aimed squarely" at preventing the company from including improved features and functionality in upgraded versions of Windows 95.

Microsoft's response emphasized not only that the government knew of its plans to integrate Internet technologies with its Windows 95 operating system, but also that the consent decree permits those types of "integrated products."

"The very language that says we're allowed to integrate things in Windows 95 was designed exactly for this type of situation," asserted Microsoft vice president Brad Chase.

TRULY INTEGRATED?

He claimed that the mere shipment of the Internet Explorer browser with Windows 95 is sufficient to meet the "integration" threshold. The Justice Department, on the other hand, contends that Explorer isn't truly integrated with Windows 95. It claims that Microsoft separately markets, licenses and distributes each version of the browser in ways different from any integrated features of its operating system products.

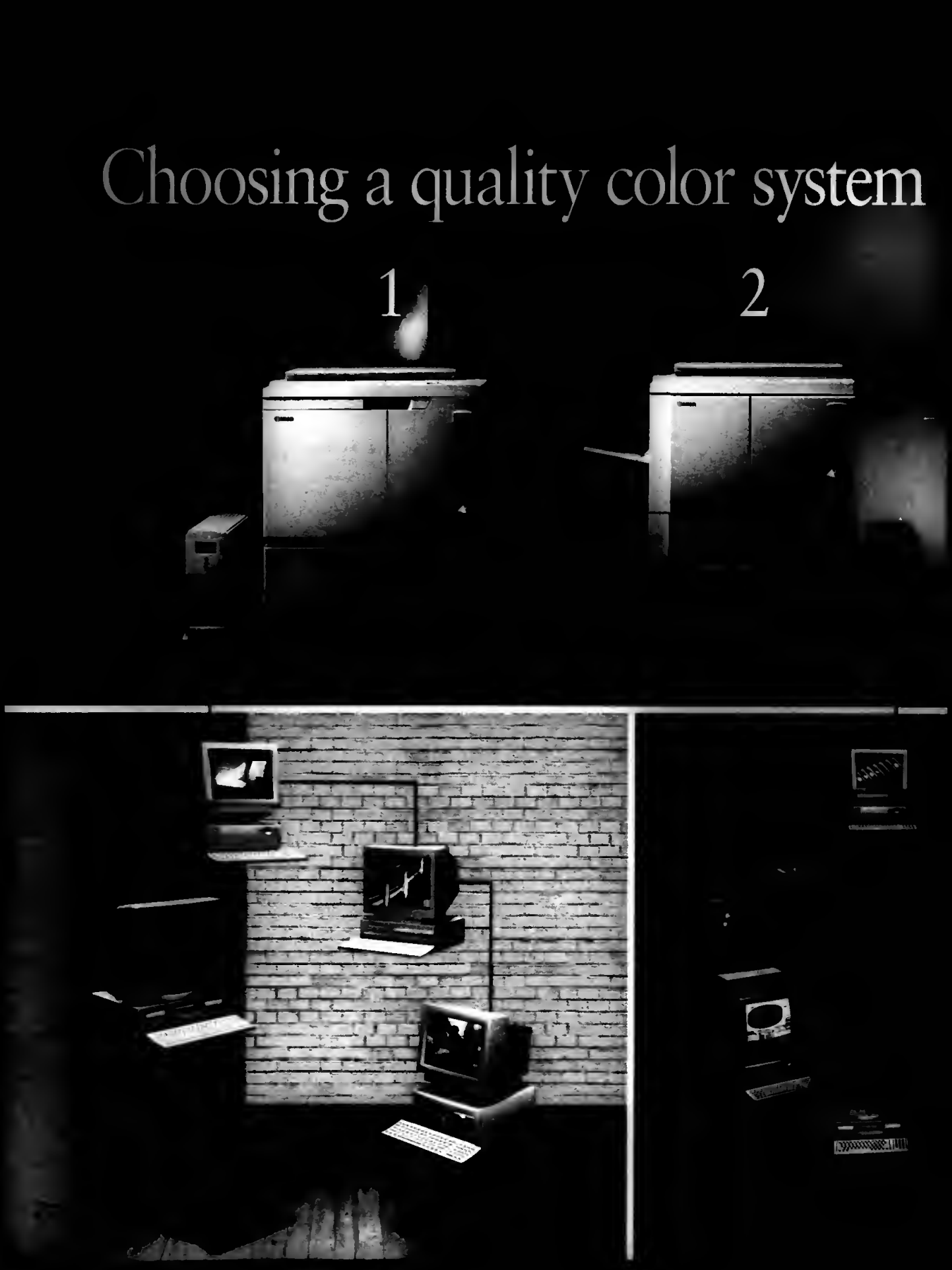
On the state level, at least seven attorneys general — in California, Connecticut, Massachusetts, Minnesota, New York, Oregon and Texas — are investigating Microsoft's business practices.

Texas took an extra step a little over a week ago, filing a lawsuit that charges Microsoft with hindering its antitrust investigation by "improperly" forcing customers and licensees to inform Microsoft before they supply information to state and federal antitrust investigators.

Microsoft claims that other companies employ similar nondisclosure agreements. □

Microsoft goes to Capitol Hill to try to win some friends. In Depth, page 109

Choosing a quality color system



for your network is as easy as

3

OPINION

Lessons learned

"Change is good. You go first," is one of my favorite pieces of *Dilbert* advice. It also sums up *Computerworld*'s cautious approach to redesigning our Web site, *www.computerworld.com*.

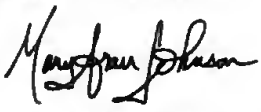
Like so many of the companies we cover in their own quest for the ideal Web site, we've watched online trends avidly while debating what our 2-year-old site should become when it grew up. We tinkered with the design and the color schemes. We swapped search engines. We tossed editorial content onto our home page like designer luggage into a cargo hold. Ultimately, we realized that although there was great stuff in there, it was getting too crowded to find it easily.

All that changes today with the launch of our reorganized and reader-friendly site. We tore it down and rebuilt it to suit readers who click in looking not only for the latest technology news but also for job resources, services and management information tools.

Oddly enough, we learned our best lessons from some highly successful consumer sites rather than from other tech publications with the all-too-familiar editorial kitchen-sink syndrome.

We've streamlined @Computerworld into four easily navigated categories: News & Features, IT Careers, Resource Center and Computerworld, Inc. The News & Features area provides an easier, more organized way to check up on everything from the latest news to audio interviews to thought-provoking opinions from our columnists. The IT Careers section contains all sorts of job-related information, stories and services. The Resource Center includes an archive of skills- and product-related data and research. And the Computerworld, Inc. spot displays our own company data such as subscription information and advertising rates.

So head over to *www.computerworld.com* and check it out. Let us know if Dilbert was right about change.



Maryfran Johnson, *Executive editor*
Internet: maryfran_johnson@cw.com

LETTERS

IRS abuses guidelines on independent consultants

COMPUTERWORLD's story about the IT labor emergency, though informative omitted what is probably the single biggest reason for the situation: Section 1706 of the Internal Revenue Code.

For 11 years now, 1706 has been used capriciously by the IRS to stifle independent technology consultants and smaller consulting firms by singling out an entire class of workers for nothing short of harassment and intimidation. The IRS and more than a few unscrupulous brokers/agents have spread disinformation about the use of independent consultants or small consulting firms, falsely claiming that it is illegal, in some cases, to use them.

Section 1706 has been used capriciously by the IRS for 11 years.

The IRS has repeatedly misused and inconsistently applied its "20 questions," which supposedly are used to determine whether a practitioner is indeed an independent consultant or an employee. These tactics have not helped to improve either the number of fully qualified, experienced practitioners nor stimulated business use of the smaller firms that could easily satisfy their development requirements.

In the 16 years my firm has been around, we have managed to stay in there and fight the trend to become a successful consulting and development firm. However, more than a few of my peers have fallen by the wayside, unable to survive 1706 issues and challenges. If we want a solution to the shortage, then both the client businesses and the practitioners need to lean heavily on Congress and get 1706 repealed.

Perhaps the horrible reality that many companies, both large and small, are confronted with significant disruptions and losses from year 2000 and other infrastructure issues will shock them into action.

J. Alan Rueckgauer
President and CEO
Rueckgauer Systems Associates, Inc.
Washington

European telecom envy

I LIKED THE *Computerworld* article on WorldCom and MCI ["WorldCom bid surprises MCI," CW, Oct. 6], though it would have been neat if the one-year outlook chart had included international telecommunications providers, too.

Many of the U.S. companies listed in the chart don't serve Europe (yet), so our choices are much more limited. Although some of our telecom companies are huge, too, the market is overregulated and noncompetitive. I'm looking forward to the day when I have as many telecom and Internet service provider choices here as I used to have in California.

Ceferino Lamb
Paris
ceferino@businessobjects.com

Nerds grew into suits

FRANK HAYES' column ["Suit or nerd?" CW, Oct. 20] continues to illustrate his complete lack of knowledge of the industry.

Before the introduction of the home-toy PC to the office, with its brigade of self-proclaimed experts, IS was very successfully managed by nerds who grew into suits. They brought with them an in-depth understanding of the techie side and hard-earned stripes in business management. Professionals (in the past) did not turn out bug-ridden software or incomprehensible systems based on the latest fad.

Paul D. Lane
Rockville, Md.
pdlane@acm.org

More letters, page 41

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

51 issues for $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown ❒ Home ❒ Business ❒ New ❒ Renew

Single copy price $3.00

*U.S. Only Canada $95. Mexico, Central/South America $150. Europe $295 all other countries $295

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other:_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgr.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Internet Products ❒ Yes ❒ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?
❒ Yes ❒ No

B4L7 R

51 issues for $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown ❒ Home ❒ Business ❒ New ❒ Renew

Single copy price $3.00

*U.S. Only Canada $95. Mexico, Central/South America $150. Europe $295 all other countries $295

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other:_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgr.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Internet Products ❒ Yes ❒ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?
❒ Yes ❒ No

B4L7 R

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

Double-check your bridge to the year 2000

Gary H. Anthes

When I set out recently to write a story suggesting that the year 2000 problem might not be so terrible after all, a colleague expressed grave doubts.

To him, the problem was so patently horrendous and complex that it would be irresponsible to suggest otherwise, no matter what Pollyannas I might find.

After some research — and I did find some Pollyannas — I had to conclude he was right. The year 2000 problem is really ugly. But I salvaged the story by adopting a slightly different premise: There are real alligators in the year 2000 swamp, but some organizations, such as the Social Security Administration (SSA), had found ways to bridge the swamp and could now sleep nights

It wasn't until after the story was printed that I found that bridge had holes.

But my embarrassment pales next to what the SSA must be feeling.

The agency recently discovered 33 million lines of legacy code that had been overlooked in its highly touted year 2000 program. Congressional auditors now say there is substantial risk that some of its mission-critical systems — those that pay out $386 billion in annual benefits — may not be fixed in time.

The SSA discovered 33 million lines of code that had been overlooked in its highly touted year 2000 program.

What's ironic about this — and so scary about the year 2000 problem — is that the agency for years has been an icon of year 2000 preparedness. It began work on the problem in 1989 when a program choked on a 21st century date.

While other agencies either wrung their hands or just sat on them, the SSA fixed millions of lines of code.

The SSA held year 2000 seminars for other federal agencies, and its IS managers gave speeches on how to survive in a post-1999 world. Whenever the year 2000 came up in public forums, such as congressional hearings, invariably someone would say of the Defense Department or the IRS, "Why can't they be more like Social Security?"

But now the General Accounting Office (GAO) reports that 54 state disability systems were excluded from the SSA's year 2000 work.

The SSA had limited its work to its central systems, which include 24,000 software "modules" and 34 million lines of code. The state systems are vital for determining eligibility for federal disability payments, but the SSA began examining them only 11 months ago.

The GAO also revealed that the SSA has no contingency plans in case its systems aren't fixed on time. The SSA said it hadn't developed them because it felt its early start on the year 2000 problem would make those plans unnecessary. Who needs contingency plans if you're planning on having no contingencies?

And in another Alice-in-Wonderland explanation, it also said it hadn't developed backup plans because it simply had to meet the deadline. In other words, if you aren't allowed to fail, you won't fail.

But probably nothing highlights the need for backup plans more than the revelation by the GAO that the SSA exchanges some 6,700 data files with other organizations. Not all of them began year 2000 work in 1989, one suspects.

There are several lessons here. First, starting early and working hard on the year 2000 problem doesn't ensure success. Second, if you have no year 2000 contingency plans, you aren't ready for Jan. 1, 2000.

Third, the devil is in the interfaces. Technically, the overlooked systems are state, not federal systems, but they're vital to the processing of federal payments. If a year 2000 problem hurts your customers, it is your problem. □

Anthes is Computerworld's senior editor, special reports. His Internet address is gary_anthes@cw.com.

Honesty, not IS, failed at HMO

Michael Schrage

No doubt you've read about the disaster Oxford Health Plans ran into phasing in a new billing system.

The system, launched more than a year ago, royally screwed up whom got billed and when. The health maintenance organization was forced to advance hospitals payments against their unprocessed invoices. Huge reserves were set aside. Cash flow congealed. The stock cratered. The chief financial officer resigned. The outlook of this high-flying entrepreneurial HMO — which was heralded as a model for the industry — is spattered with doubt.

We can treat this as a cautionary tale of MISmanagement. We can breathe a sigh of relief and mutter, "There but for the grace of God go I."

We can even smirk arrogantly in the belief that a disaster of that magnitude could never happen to us.

Each of those responses qualifies as rational. But my reaction to this debacle is emphatically not rational.

Each story I read left me furious and incredulous. Mind you, I haven't a penny invested in Oxford, and I haven't called up my friends who work with HMOs.

The intensity of my feelings reflects my most deeply held passion about the real sickness that plagues enterprise management — its fear of responsibility. I don't doubt for a moment that Oxford's switch-over to this new system was hideously mismanaged.

Maybe Oxford's was the worst IS team since Grace Hopper coined the word "bug."

But, please! Just where the heck was top management during that year of living dangerously? Just how deaf, dumb and blind were the people running this company?

When did Oxford's board of directors, which is legally responsible to exercise fiduciary oversight, first know that the company's new billing system was creating more problems than it was solving?

No doubt, we're going to find out the explicit answers to these questions — not a few delivered under oath. Let me tell you what those answers will have in common: dishonesty.

No, the answers themselves won't necessarily be dishonest — although I wouldn't bet against that, either.

But dishonesty is the disease that made this HMO sick unto near-death. Dishonesty and being dishonest about that dishonesty is the common denominator of these kinds of dysfunctional disasters.

You tell me: Is it unreasonable to expect that an organization phasing in a new billing system — the mission-critical component that assures accounts receivable, accounts payable and cash flow — would at least audit the effectiveness of its software in its earliest months? Particularly if it was preaching to Wall Street about how fast it expected to grow and how important financial controls are to its business?

Oxford was the victim of a monstrous deception – or self-deception.

The answers are self-evident. The reason Oxford was "surprised" more than a year later is that it was the victim of either a monstrous deception or an even more grotesque self-deception. Not trying to know is as dishonest as ignoring what you do know.

Based on my personal experiences, most IS people do a lousy job of covering up what a miserable job their systems are doing. Indeed, "the suits" are usually ragging the geeks about what incompetents they are. It is incredible that the business side of the house could be so ignorant of the billing problems that the new system was creating.

The Oxford lesson isn't that mismanagement of mission-critical IS can clip the wings of a high-flyer; it's that honesty is ultimately cheaper than dishonesty. □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

THE OTHER IS HIS WINDOWS NT® SERVER.

When Swiss bankers make Internet transactions, they do it on a Tandem® Windows NT Server-based system. And they do it with the security that Tandem brings in handling 90% of the world's stock transactions, 80% of all ATM transactions, 66% of all credit card validations, and two-thirds of all 911 calls in the United States. Tandem's cost-effective solutions for modular growth in the areas of finance, retail, telecommunications, insurance and elsewhere now bring business-critical reliability to every customer, for every transaction they make. Contact us at www.tandem.com for more information. Or call 1-800-NONSTOP, ext. 8003 to receive our latest information pack which includes the new Windows NT Enterprise Management Sampler CD.

Every second, every transaction, every customer counts.

Solutions Profile:

IT leaders from around the globe met and discussed three emerging technologies with some of today's brightest minds. The three technologies portrayed included Distributed Computing; Data Mining and Data Warehousing; and Doing Business with Internet Technologies.

Now in its fourth year, these IT leaders met with peers and industry experts to examine case studies and engage in open and honest dialogue. Within the Solution Lab portion of the program, ETS sponsor Computer Associates and its customer, Shared Medical Systems (SMS), discussed its integration of Unicenter® TNG™.

Shared Medical Systems Corporation designs systems and services to help organizations improve their quality of care, financial performance and strategic position.

COMPUTER ASSOCIATES

Challenge

Shared Medical Systems Corporation (SMS) is the worldwide leader in providing health information solutions for the health industry. The company, based in Malvern, Pennsylvania, provides a full range of information systems and services to over 2,700 customers in 20 countries. Over 1,000 of those customers, with over 185,000 attached devices, utilize SMS for remote computing services built on IBM mainframe technology platforms running out of SMS' Information Services Center in Malvern. SMS needed to select enterprise management tools to provide their growing number of distributed computing systems customers with remote computing and remote server management deployment options.

Solution

SMS selected Unicenter TNG from Computer Associates International, Inc. (CA) as the enterprise management tool capable of supporting these efforts. The driving force behind this selection was:

- Unicenter TNG's openness and ability to support end-to-end enterprise management within a heterogeneous network environment, and most importantly, support SMS' preferred client/server technology platform, Microsoft Windows NT Server running on either a Digital AlphaServer or Intel-based server.
- Unicenter TNG's ability to revolutionize and simplify the daunting tasks of managing multiple enterprise-level IT environments with a Real World Interface™, a graphical user interface based on 3-D visualization and animation, and Business Process Views™, which lend a business perspective to the management of all enterprise resources.
- CA's willingness to work closely with SMS to jointly develop SMS' remote server management services using Unicenter TNG.

Solution Provider

Computer Associates International, Inc.

COMPUTERWORLD

LETTERS

Columnist is out of touch with the real world (meaning Earth)

MICHAEL SCHRAGE'S column "Rocketing IS salaries: The party's over" [CW, Oct. 6] seems to have been aimed at a planet other than Earth. Here, IS salaries have trailed inflation for 10 years and are now recovering somewhat. In the mid-1980s, a senior programmer/analyst could make about $50,000 per year. With inflation, that's about $100,000 now. Yet there are few $100,000 jobs out there. Maybe if salaries continue to increase at double-digit rates for another few years, we'll get back to past levels.

Schrage writes that we would never have witnessed the evolution of enterprise computing if programmers in the past had been paid today's wages. I quite agree, but in the opposite sense.

I take it Schrage means it would have been too expensive. Au contraire, today's low salaries would never have attracted enough good people for progress to have occurred.

Joshua Stern
Los Angeles
jrstern@gte.net

SOMEDAY, IF *Computerworld* columnist Michael Schrage ever dares to scale the walls of academia and enter the real world of business, he will discover a world governed by the laws of supply and demand. He will discover that just as he cannot will away the forces of gravity, he cannot will away higher prices when supply is short and demand is growing exponentially.

Managers who "reassert themselves" and demand that IS people work for lower-than-market wages will end up with incompetent, inept IS people, and their businesses will suffer. They will be eaten alive by much more competent competitors.

Peter Shaw
Charlotte, N.C.
peter.shaw@worldnet.att.net

Java is a language, not a religion

HOW CAN *Computerworld* print a letter like Dan Pacek's with a straight face ["Read the fine print of Microsoft/Sun agreement," CW, Oct. 13]? He claims that Microsoft-licensed Java "will be Windows and ActiveX, which is not what the public wants." Can you run that one by me again? Windows is the most popular piece of computer software since the day they plugged in the Univac.

If anything, Microsoft ought to charge Sun in exchange for providing Java support — Java apps are about the only thing I've found that can make Windows NT crawl on a 300-MHz Pentium. God knows Sun isn't qualified to do it right.

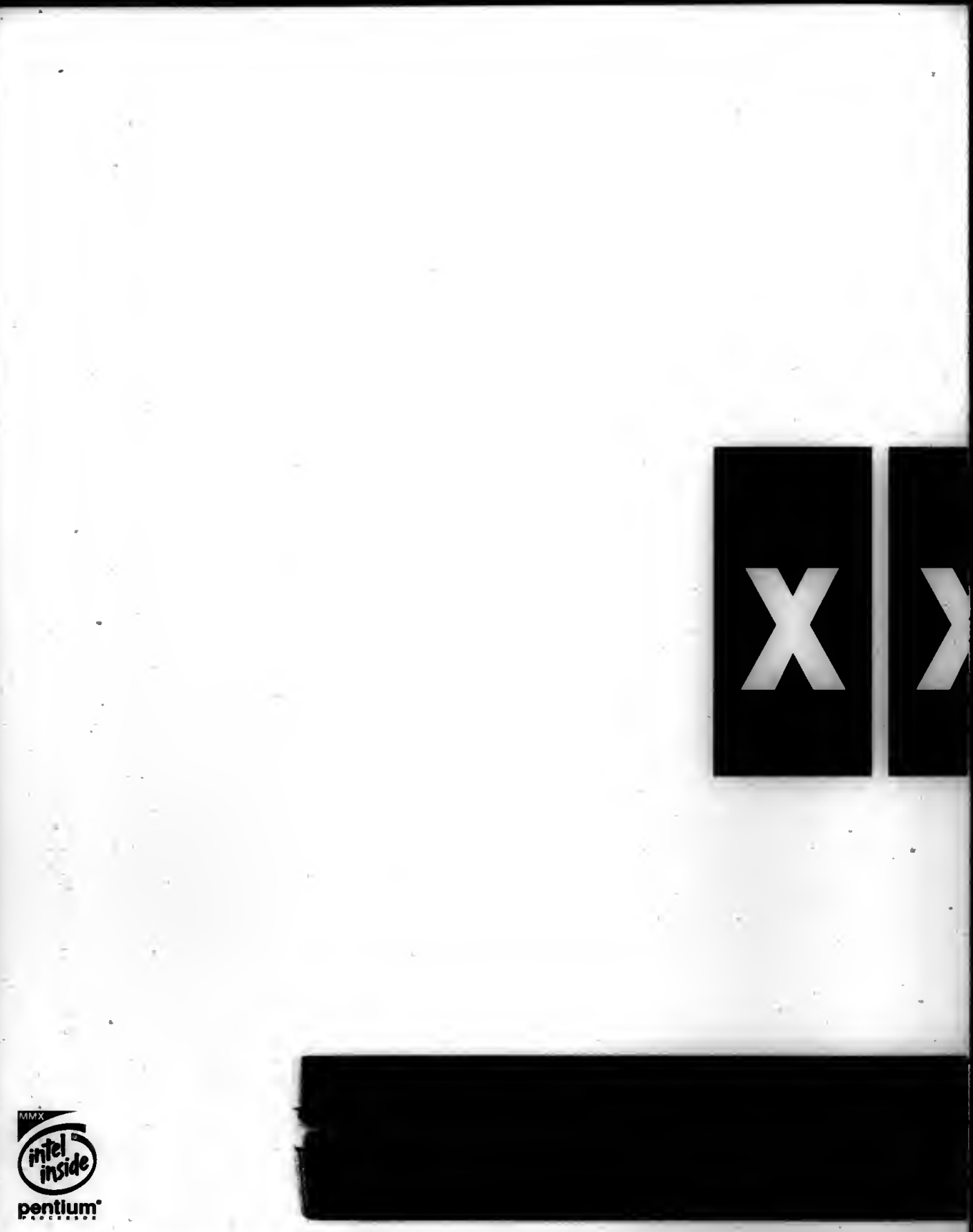
It's a language, not a religion, Dan.

Jon McGuire
Alltel Mortgage Information Systems, Inc.
Jacksonville, Fla.
jon.mcguire@alltel.com

Microsoft will get the message when customers stop buying

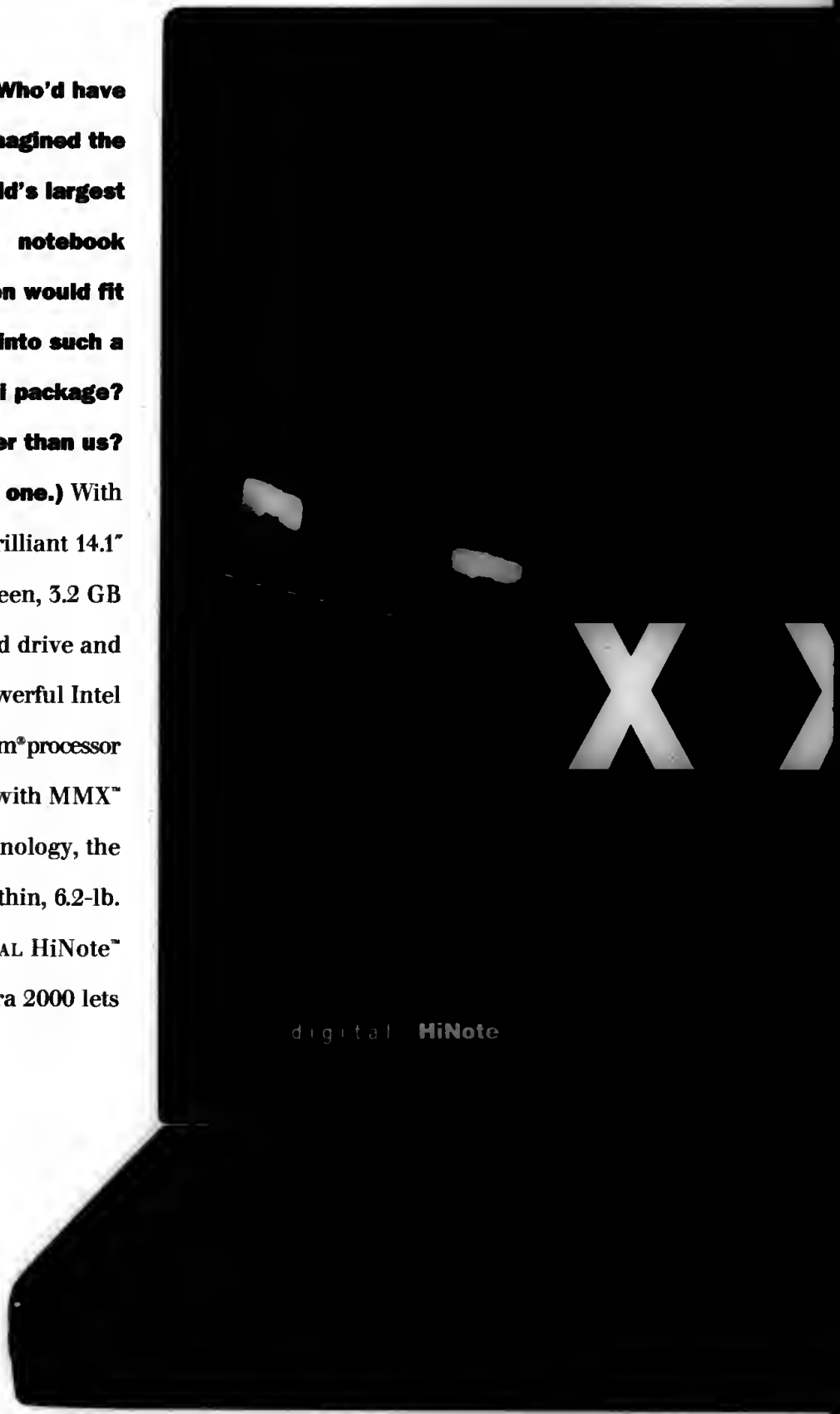
IN THE OCT. 13 issue of *Computerworld*, there were several articles about the Sun/Microsoft war ["Users caught in Java cross fire," "Users fear true cross-platform will be casualty of Java war," "Dueling CEOs"]. In each, those interviewed said they were going to wait until the dust settles before continuing or starting projects. They also said this war has put end users in the middle of this circus. Well, let's face it: The entire end-user community has allowed these computer giants (especially Microsoft) to tell us what we want for too long. We users should start telling Microsoft — or any other vendor that tries to tell us what we want — that we are not going to stand for it. We can do this by tightening our purse strings. It's time for Microsoft to start giving customers what they want, or risk losing us.

J. Fitzgerald II
Roanoke Rapids, N.C


MMX
intel inside
pentium
PROCESSOR

K S

Who'd have imagined the world's largest notebook screen would fit into such a small package? (Other than us? No one.) With its brilliant 14.1″ screen, 3.2 GB hard drive and powerful Intel Pentium® processor with MMX™ technology, the 1.4″ thin, 6.2-lb. DIGITAL HiNote™ Ultra 2000 lets



MMX intel inside pentium

you do whatever, wherever. Add in its extra-long battery life, full plug-and-play Windows NT® compatibility, 20x swappable CD-ROM, and what have you got? No room left for compromises. For details, find us at www.digital.com/xxl or call 1-800-DIGITAL. And get ready to win in a networked world.

digital™

©1997 Digital Equipment Corporation. Digital, the Digital logo and HiNote are trademarks of Digital Equipment Corporation. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Windows NT is a registered trademark of Microsoft Corporation.

NO MATTER WHAT PROBLEMS DISTRIBUTED APPLICATIONS
THROW YOUR WAY, WE CAN HELP YOU GET OVER THEM

!Candle

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

SECURITY CHECKS

How often does your company consult security executives on the issue of risk management? (includes physical and information security)

Base: 179 security executives

Source: Pinkerton's, Inc., Encino, Calif.

Mercedes-Benz tries just-in-time

COURTLAND WILLIAM RICHARDS

Dan Zirbes said Mercedes-Benz had to look outside for IS skills to build "most cost-efficient plant in America".

By Thomas Hoffman

A WARNING TO the Big Three automakers: The Germans are here, and they're using aggressive pricing and a sophisticated manufacturing system to challenge those humongous profits you have been piling up in the sport utility vehicle market.

Last month, Mercedes-Benz U.S. International, Inc. began to ship its M-Class All-Activity Vehicle from the company's first non-German manufacturing plant in Vance, Ala.

With prices starting at $33,950, the M-Class is just a few thousand dollars more than a Jeep Grand Cherokee or a Ford Explorer. The plant raises

Mercedes, page 52

Bristol-Myers CEO demands massive supply chain fix

By Randy Weston

BUSINESS AUTOMATION

WHEN Charles A. Heimbold Jr. took over as chairman of $17 billion pharmaceutical giant Bristol-Myers Squibb Co. in late 1994, he ordered executives to streamline global operations enough to add $1.5 billion to the bottom line. One of the most significant projects was the re-engineering of the company's $3 billion global supply chain.

The task meant assembling a team of 200 business and information systems people to implement R/3 business process automation software from SAP AG, based in the U.S. in Wayne, Pa. The result: a more efficient production and distribution process that the company expects will save $150 million per year.

THE BACKBONE

R/3 will be the backbone of the system that links business-process applications, according to David Edelstein, vice president of information management at Princeton, N.J.-based Bristol-Myers. The company's critical software includes Irving, Texas-based 12 Technologies, Inc.'s advanced planning and scheduling applications and supply-chain management software from Manugistics, Inc. in Rockville, Md.

It is a task that Edelstein said was sorely needed to ensure information flowed uniformly among all divisions of the company. "When the global procurement group wanted to know how much cardboard was used worldwide, we had to comb through 14 accounts-payable systems to figure out how cardboard was coded in each system. It was a nightmare," he said.

With the new system, code for cardboard or any other item is the same throughout the

Bristol-Myers, page 52

BEST PRACTICES

Feds win big in less-publicized IS projects

By Gary H. Anthes
WASHINGTON

GLANCE AT the federal government's efforts to modernize tax, air traffic control and weather systems, and you might well conclude that Uncle Sam is utterly clueless when it comes to information systems. But in a recent study of less highly publicized projects, a government-industry team found cause for optimism.

"It's responsible management to report back to your owners"

A recent report by the federal Chief Information Officers Council and the Industry Advisory Council details 20 success stories, including the following:

■ A Defense Department medical supply system based on electronic data interchange is returning $2.6 billion over 15 years on an investment of $662 million, has reduced inventory

Feds, page 52

Co-op farms out IS to third party

By Jaikumar Vijayan

AS PART OF a major business process reorganization that was launched in 1995, Farmland Industries, Inc. decided to centralize and standardize its information systems operations and look for ways to sell IS services to third parties.

To achieve those goals, the $9.8 billion farmers cooperative, which is based in Kansas City, Mo., earlier this year spun off its IS organization into a separate entity jointly owned

Co-op, page 51

DOING IT TOGETHER

Why some customers and vendors are teaming up on IT outsourcing ventures:

- Lets both parties retain ownership and key management roles
- Fosters more cooperative working relationship between customer and vendor
- Holds potential for customer to make profits selling IT services to third parties
- Lets vendor expand into new sectors of the IT services industry

If your mainframe-based enterprise has expanded to include thousands of PCs and servers, while your internal resources haven't, call Vanstar, the distributed computing experts. Vanstar offers the network management and life cycle services you need to manage growth: consulting and design, network planning, integration, procurement, financing, installation, and deskside support. Everything you need to break free of your internal constraints. With Vanstar, you choose as much, or as little, of our expertise as you need to master your distributed computing environment. That flexibility is why hundreds of Fortune 1000 companies have selected Vanstar. To learn how you can stay ahead, please visit us at **www.vanstar.com/8ball** or call us at **1-800-994-2345**. We'll help you make a clean break.

Vanstar
The Technology Services Company
www.vanstar.com

VST
Listed
NYSE

©1999 Vanstar Corporation. All trademarks are the property of their respective owners.

The rise and fall of Apple is a page-turning soap opera

They should never have called it the "Synergy Room." Because at Apple Computer, Inc., that conference space seemed to be the place where, after a great start, nothing went right and nobody worked well together.

In his book, *Apple* (Times Books; $27.50; 442 pages), Jim Carlton chronicles all the events that led a brilliant start-up — one that helped hatch the PC revolution and gave the computer industry millions of new users — to the brink of failure. Along the way, Carlton details the don'ts every business should avoid.

In his book, author Jim Carlton chronicles all the events that led Apple, a brilliant start-up, to the brink of failure

WHEN WE WERE YOUNG

The beginning, of course, was exhilarating. Steve Jobs drove the Macintosh design team to create something "insanely great." As Apple CEO, former PepsiCo, Inc. executive John Sculley created a world-famous brand name.

Engineers slept in Apple's Cupertino, Calif., lobby to beg for job interviews. The Macintosh leaped off store shelves as IBM cloners and Microsoft's operating system lagged far behind.

For a while, Apple executives — fearful they would give away the crown jewels — faced down arguments to open up the Macintosh for others to sell and enhance. Among key initiatives shouted down by a vocal minority was a plan to license the Mac OS (a 1985 memo from Bill Gates suggests how to do it). Another was a version of the Mac OS that would run on Intel Corp. chips (refused because it would compete with Apple's deal with IBM to build PowerPC machines).

A lot of this is well-known, of course, but Carlton, a *Wall Street Journal* reporter, puts the stories into one encyclopedic guide to Apple's corporate soap opera — which continues today with Jobs again in charge.

My one quibble is that Carlton throws out so many names of executives and project engineers that it can be tough to keep them all straight.

But through Carlton's work comes not only a clear history of the PC industry, but also key business lessons. Among them: Don't run your company on emotion and ego; don't rely on consensus to make tough decisions; and don't be afraid of working with other companies for common benefits.

— *Michael Goldberg*

Companies bend to keep telecommuters productive

▸ *Nortel establishes separate help desk*

By Kim Girard
ORLANDO, FLA.

MANY COMPANIES nationwide are adopting telecommuting programs to offer more flexibility, save money or deal with space issues.

Nortel Corp., for example, expects that more than 3,000 of its 68,000 employees will telecommute one to five days per week by the end of the year.

To cater to home users' unique problems — often involving an Integrated Services Digital Network connection, a problematic telephone line or a modem configuration snafu — Nortel has established a separate 15-person help desk, said Tony Smith, senior manager of telecommuting services at Nortel.

"The help desk [used to take] two weeks to answer a problem," Smith said. "We needed a help desk that catered to remote users."

But flexible support isn't the only challenge telecommuting presents. There also is the question of how to use the space left behind.

"Obviously, the way we've designed space doesn't work," said Barbara Reeves, virtual office program manager at The Boeing Co.'s commercial airplane division in Seattle, which has a telecommuting pilot program.

"We're trying to come up with something that's designed to the way you're doing work," Reeves said.

She said the challenge is working with facilities managers who operate within s separate department and control money needed to make changes. □

Make Room.

When we designed our

new high capacity drive, common sense dictated it should also work with standard diskettes.

PC Computing

"Over 300 percent faster than the [competitor's] drive." 10/97

IOMEGA

Nova inks $542M deal to outsource with IBM

By Jaikumar Vijayan

WHY NOVA OUTSOURCED IS

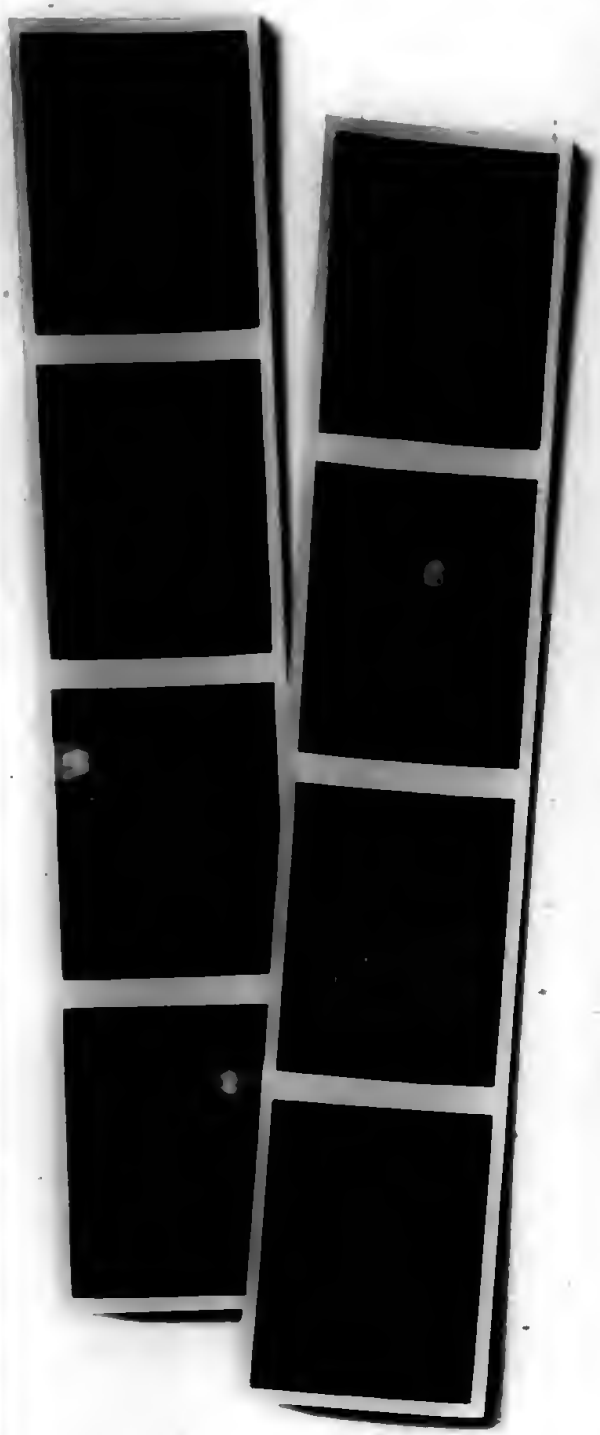
COMPANIES ARE forging ahead with outsourcing deals, despite the well-publicized disintegration of some high-profile contracts.

The latest to move forward is Nova Gas Transmission Ltd. in Calgary, Alberta, the largest carrier of natural gas in North America, which recently inked a $542 million outsourcing deal with IBM and DMR Consulting Group, Inc. Under terms of the deal, Nova will outsource all application development, technology enhancements, maintenance and support functions to DMR.

IBM will take on operational responsibility and all desktop support functions. Nova, meanwhile, will retain a huge enterprisewide SAP R/3 implementation project.

The company has transferred most of its approximately 500 information systems personnel to both outsourcers but will retain about 15 development staff to handle new core projects.

The outsourcing deal will give Nova access to a broader range of services and skills and to specific application development skills, such as enterprise resource planning. It also is expected to trim the $100 million that Nova spends annually on IS operations, according to Bruce McNaught, vice president of internal resources at Nova. He didn't specify the amount of anticipated savings. □



Co-op farms out IS

CONTINUED FROM PAGE 47

with systems integrator Ernst & Young LLP.

The idea is to leverage the operational experience of Farmland's IS organization with Ernst & Young's application development skills to sell a wide range of services back to Farmland and, eventually, to third parties.

For example, the two companies are implementing SAP AG's R/3 software enterprisewide and consolidating multiple applications spread across the corporation into more centralized systems.

The joint venture company, OneSystem Group, is expected to take in between $70 million and $80 million annually selling information technology operational and business process outsourcing services to Farmland and to more than 500 farmers nationwide who represent the Farmland Cooperative System, according to Chief Information Officer Kent Nunn.

The standardizations, process changes and streamlining of Farmland's IS operations are expected to save the company $40 million per year, Nunn said.

If the venture succeeds in achieving those ambitious goals, Farmland will be among a handful of organizations to have pulled off a true joint operation of this kind, analysts said.

Under the deal, Farmland and Ernst & Young will share equally in the costs, profits and liabilities. So far, Farmland has transferred its entire 400-person IS unit to OneSystem and Ernst has transferred about 25 full-time professionals.

"The only ventures I have heard of similar to this have all been unsuccessful," said Susan Scrupski, an analyst at Technology and Business Integrators, Inc. in Woodcliff Lake, N.J.

Two notable failures this year have been Transquest, a joint venture between Delta Air Lines and AT&T Corp., and one between Mutual of New York and Computer Sciences Corp.

"The reason these things fell apart is because they were never really autonomous. They basically were trying to serve two masters: the two founding companies," Scrupski said.

Six months into the deal, both Farmland and Ernst & Young acknowledge some of the challenges involved in making their joint venture work, but both companies remain bullish.

So far, the new venture has started providing IS services to Farmland. OneSystem also recently decided to further outsource Farmland's data center operations to integrator Systems Management Specialists — a move that will save Farmland $14 million to $15 million in the next five years in labor and infrastructure costs.

"We continually are challenged from a communications standpoint. It is a confusing time for all the people involved [because] of the dramatic changes in the way that service is delivered and the way we interact with our customers," Nunn said. "But the venture gives Farmland a way to use technology to capture business new opportunity," he said. □

Mercedes tries just-in-time

CONTINUED FROM PAGE 47

the bar on manufacturing, taking the concept of just-in-time manufacturing to the next level with something called just-in-sequence manufacturing.

With just-in-time manufacturing, auto components such as mirrors and seats are typically built weeks in advance and delivered a few days ahead of production schedules.

Using just-in-sequence manufacturing, once Mercedes-Benz puts a vehicle through its paint shop, a computer system sends an order to a supplier such as Johnson Controls, Inc. in Milwaukee to deliver a dashboard within a few hours.

Just-in-sequence is risky. If an electronic data interchange-based system at Johnson Controls or another supplier crashes, Mercedes-Benz could be "vulnerable to a plantwide shutdown," said Robert Sigler, an automotive analyst at Sanford C. Bernstein & Co. in New York. However, the payoffs could be enormous. With 70% of its components being developed by other suppliers, Mercedes-Benz could slash millions of dollars in inventory management costs, Sigler added.

"This is the most cost-

efficient plant in North America," said Sigler, who expects the $300 million plant to pay for itself by 2001.

IBM IN CHARGE

That's pretty impressive, considering that the 2 million-square-foot plant was an empty field just two years ago. With no IS staff to speak of, Mercedes-Benz U.S. picked IBM to implement and manage the systems needed to run the plant.

"We couldn't do this by starting to recruit and hire people to build an IS organization," said Dan Zirbes, information technology manager at Mercedes-Benz U.S.

IBM spent months toiling with Zirbes and a skeleton crew to get the company's The Baan Co. enterprise resource planning software up and running. Zirbes wouldn't disclose the size of the IT investment behind the plant. However, analysts estimated the cost at less than $10 million for hardware and software.

The plant met its deadline to build its first production vehicle last February, Zirbes said. The company expects to build 18,000 to 19,000 trucks this year and 65,000 next year when the plant ramps up to full capacity.

Perhaps the biggest challenge Zirbes faced was communicating with his German-speaking counterparts.

At the same time the U.S. plant was being built, Daimler-Benz was developing a bill of materials system that Mercedes-Benz U.S. had to tie in to its Baan environment.

To work through the language barriers, the U.S. unit had a bilingual consultant act as a "middleware translator," Zirbes said. □

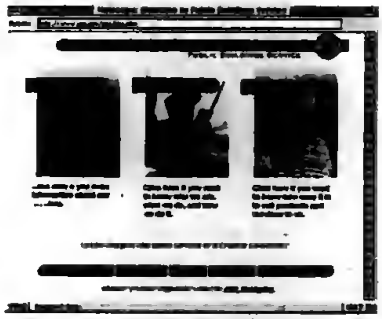
Feds log some IS successes amid more-public failures

CONTINUED FROM PAGE 47

from a supply of 380 days to 10 days and reduced order and shipping time from 20 days to one day.

■ A client/server system at the Food and Drug Administration is saving U.S. businesses $1.2 billion over seven years by streamlining import processing.

■ An intranet-based federal property management system will return its initial investment in 23 months while reducing information access time from days to minutes.



The GSA's Public Building Service site offers a central point for information about real estate and services for government agencies

"It's responsible management to report back to your owners — taxpayers and the Congress — what they are getting for the $40 billion to $50 billion the government invests each year in IT," said Alan Balutis, deputy CIO at the Commerce Department and chairman of the committee that found the best practices. "There really are a lot of things that demonstrate a solid return on investment, and people should see that the landscape isn't totally bleak and dark."

The projects range widely in application, size and technology, but certain elements recur: use of commercial, off-the-shelf products; outsourcing; use of the Internet and World Wide Web; rigorous focus on performance metrics; and intimate involvement of end users.

Other factors include a growing tendency among government agencies to focus on their core missions and outsource IS projects, according to government IS consultant Warren H. Suss, president of Warren H. Suss Associates in Jenkintown, Pa. Agencies are also increasingly turning to commercial applications rather than relying on custom development. And they are evaluating systems by user-oriented metrics — such as time to process a payment claim — rather than IS metrics such as MIPS or bandwidth, Suss said.

The Environmental Protection Agency won a best practices award for its Envirofacts Data Warehouse. It knits together and offers to the public 80G bytes of environmental data — information previously available piecemeal and only to EPA specialists.

The system — whose development was outsourced — uses the Web and commercial client/server, database and geographic information system (GIS) products.

"Technology became our friend rather than our fear," said Envirofacts director Pat Garvey. The Web site got 800,000 visits last month, he said.

AGENCYWIDE EXPERTS

The project was a success in part because the project team, "instead of being IT techies," was made up of environmental experts from across the agency, Garvey said. He said he didn't go to the CIO for funds for a big, agencywide project — a strategy that wouldn't have worked given budget constraints. "We've been very creative; we've gone to individual offices that are trying to solve public access problems or data integration problems or GIS problems or data standardization problems and said, 'We'll take the money you have in your budget for that problem, and we'll solve it for you.' "

Nine of the 20 projects used Web technology. "Making customer service and data sharing Internet-oriented is just taking all kinds of risks and complexities out of development projects," said Philip Kiviat, the Industry Advisory Council's liaison to the CIO Council. □

Bristol-Myers CEO demands IS overhaul

CONTINUED FROM PAGE 47

company. The 25,000 employees who will use the new software — about half the company's staff — can easily call up that kind of data to better plan use of supplies and product delivery.

Customers can now get a single bill for all business they do with Bristol-Myers, whether they are ordering Clairol shampoo, Ban deodorant or any of the 200,000 other products the company makes.

Customers "want a single electronic transaction, and we need to get it to them"

"Wal-Mart does not want an invoice from Clairol, an invoice from consumer medicines and an invoice from prescription medicines," Edelstein said. "They want a single electronic transaction, and we need to get it to them."

As enterprise resource planning systems become more powerful and more critical in maintaining the processes behind the business, they are becoming more complex to manage.

To tackle the problem, Bristol-Myers' implementation team will remain in place after the project is complete to maintain the software and roll out upgrades.

Jim Shepherd, an analyst at Advanced Manufacturing Research, Inc. in Boston, said that is a good approach. User companies, he said, need to be prepared to dedicate permanent staff to the software's management.

"Most companies are still in the early implementation phases, so they aren't yet dealing with the problems of release management," he said. "Once you get these teams together, you need to leave them in place. This is the first asset a company has bought that begins changing the minute they bought it."

Five Bristol-Myers sites went live with the system Sept. 1, and more than 20 others are due to start by the end of next year.

By the end of 1999, all the company's 65 sites in 150 countries are expected to be connected to the system. □

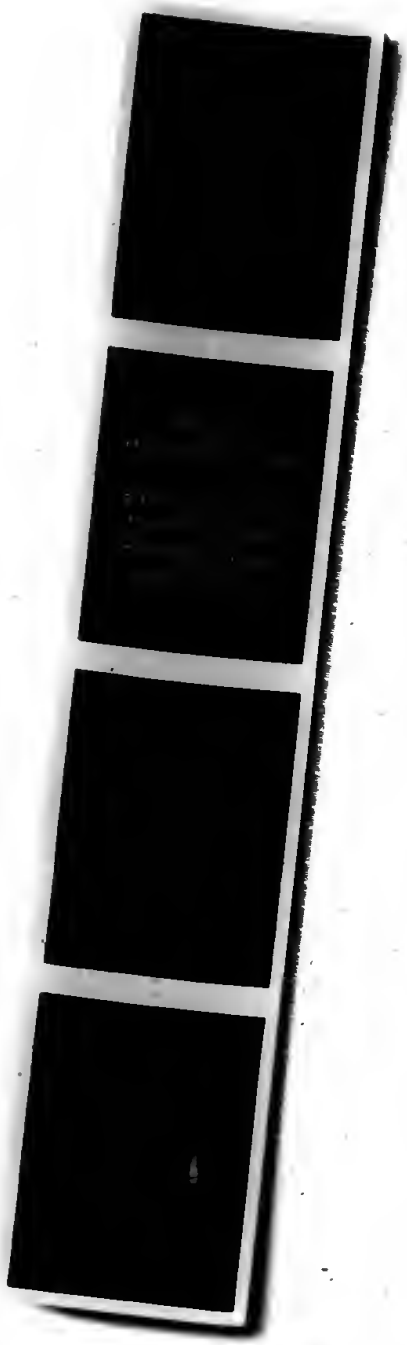
RELATED LINKS

For these and other related links, point your browser to *www.computerworld.com/links/97111/bprlinks.html*

►Business Process Reengineering & Innovation *http://www.brint.com/BPR.htm*

►Business Process Redesign: An Overview *http://www.brint.com/papers/bpr.htm*

►Business Processes Resource Centre *http://bprc.warwick.ac.uk/index.html*



Now, there's a reliable way to automatically back up, archive and retrieve all their critical business information.

Presenting Network Storage Manager

A lost file here. No backup there. Nobody in your enterprise is perfect. Luckily, IBM has an integrated storage solution for these sorts of problems.

IBM Network Storage Manager gives you reliable backup, recovery and archiving of stored data anywhere on your network. Automatically. This solution of powerful software and lightning-fast hardware easily attaches to your network like any other server. So it's nondisruptive.

It also works across all major computing platforms, including NT, Sun, HP and IBM. There's a broad family of flexible and reliable storage solutions for just about any size company or department. And they can be easily upgraded as your business needs change.

Call us at 1 800 IBM-CALL, ext. RA062, or visit www.ibm.com/storage/backup to learn how IBM storage solutions can give everyone access to the information they need. Sometimes, in spite of themselves.

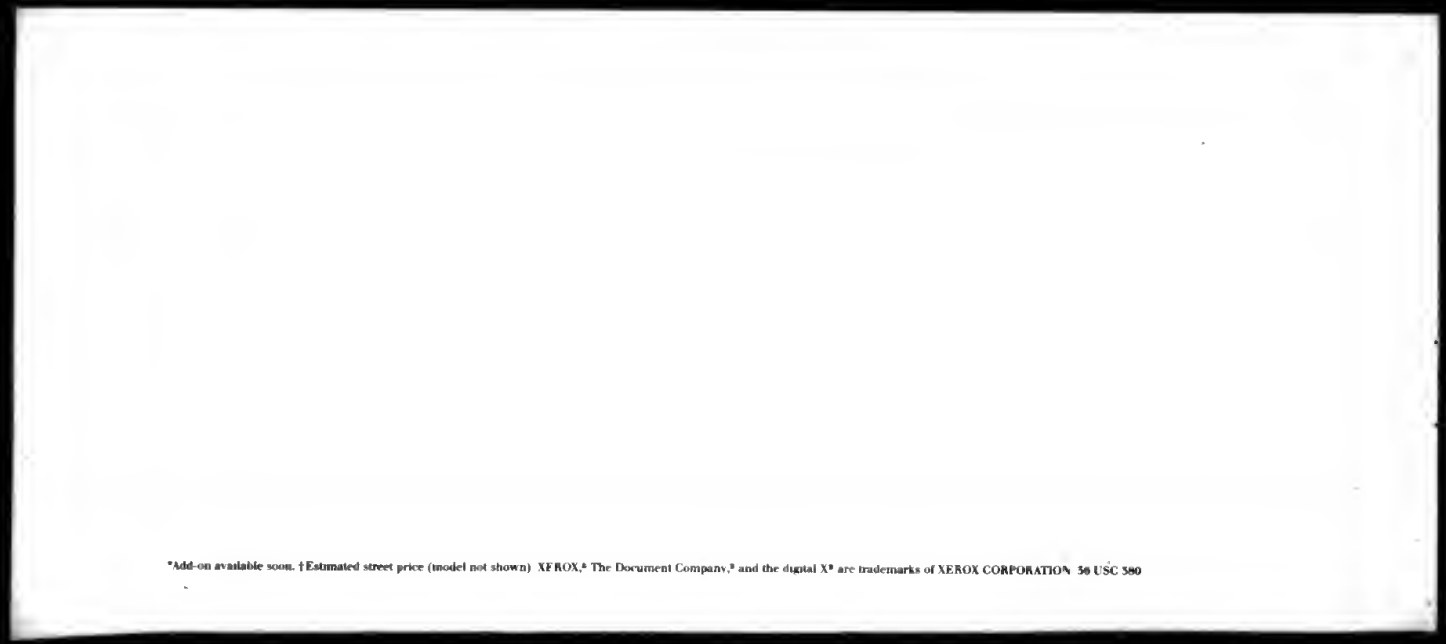
www.ibm.com/storage/backup

IBM

Solutions for a small planet™

It sorts.
It staples.
It's fast.
It's from Xerox.

It's not what you think it is.



*Add-on available soon. †Estimated street price (model not shown). XEROX,® The Document Company,® and the digital X® are trademarks of XEROX CORPORATION. 50 USC 580

It's a new benchmark in Network Printing.

Introducing the Xerox DocuPrint N32. With its 32 ppm speed, copier-like options, and $2900* starting price, there's nothing like it. Its modular design lets you build your own solutions. And along with seamless connectivity, you get our new WorkSet technology that provides true multiple document set printing and dramatically minimizes network traffic. We'd like to show you all the ways the DocuPrint N32 makes office printing simpler and far more productive. Give us a call at 1-800-34-XEROX, ext. 2976. In Canada, 1-800-ASK-XEROX, ext. 2976. Or visit www.xerox.networkprinters.com.

Xerox Network Laser Printers. A different line of thinking.

THE DOCUMENT COMPANY
XEROX

Cisco Powered Network™

If the answer is Cisco, you know your network service provider is supported by the products and technology that brought the Internet to business. In fact, the Internet as we know it today is built on Cisco equipment.

Cisco Powered Network™ service providers are equipped to make your network work for you. Whether it's Internet access, ATM, frame relay or other data services, you will know your business is getting the quality it can depend on.

Look for the new Cisco Powered Network mark or visit our Web site at www.cisco.com to find out more about the participating network service providers. Either way, you will know your provider is committed to giving your business the most in reliable, secure and innovative service. And you will know it's powered by Cisco – the company that makes the world's networks work for business.

CISCO SYSTEMS

The Network Works.
No Excuses.℠

©1997 Cisco Systems, Inc. All rights reserved.

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

IP means lower overhead

How many users can one E-mail administrator support?

Internet-based messaging system	1,300
Client/server mail system	740

Source: Creative Networks, Inc., Palo Alto, Calif.

Intranet project aims to heal Bosnia

▸ *Volunteers tap in to 'net technology*

By Sharon Machlis

SOME U.S. volunteers are hoping that Internet technology will play an important role in rebuilding Bosnia-Herzegovina after its devastating four-year war.

Several groups are working to boost Internet access in cities where almost all communications were cut off by years of siege.

And academics are trying to reconstruct documents lost when Serb forces destroyed the National Library.

The latest high-tech effort, Project Bosnia, plans to set up an intranet in the Serb-held city of Banja Luka for independent journalists to communicate with one another.

"It's a useful step to open up some new channels of information exchange," said Henry Perritt Jr., dean of the Chicago-Kent College of Law, which is part of the intranet project.

"One of our major efforts is to promote independent media . . . [and] improve access to information."
– Janet Garvey, U.S. Embassy

Balkan experts say that media controlled by nationalist extremists spewing ethnic hatred contributed greatly to the war in Bosnia, which is why it is important today for independent media to be functioning in the country.

AT HOME IN BANJA LUKA

Project Bosnia, sponsored by the Chicago-Kent and Villanova University law schools, already has identified a home at the Banja Luka University-based media center for a donated Sun Microsystems, Inc. server.

I. V. Ashton, a third-year Kent law student just back from Bosnia, said he hopes the next step might be a wireless connection across the former front line between journalists in Banja Luka and Sarajevo and eventually access to the wider Internet.

The intranet project meshes with U.S. government efforts to bolster anti-Karadzic forces within Republika Srpska, the Bosnian Serb entity created by the Dayton peace accords.

Radovan Karadzic, charged with genocide and crimes against humanity, still holds power in most of Srpska and

Bosnia, page 58

SHARON MACHLIS

'net phone service dials up big savings

By Matt Hamblen

MARWAN ITAYIM runs a satellite network marketing operation from Cyprus, Greece, and makes nearly all his international telephone calls over the Internet.

His savings: about 90% over conventional international rates.

Analysts said that is the kind of cost-cutting that should persuade network managers in large companies to at least test an Internet calling service. Savings could be just as good for companies that call internationally, although domestic rates are too low to make Internet calling cost-effective in the U.S., analysts said.

Instead of paying between $1.50 and $a per minute to his local telecommunications provider, Itayim pays only 10 to 15 cents per minute for calls to the U.S. from Cyprus.

Phone service, page 58

Net2Phone users can click on a keypad on a PC interface to make a call

Intranet eases mutual fund merger pain

By Carol Sliwa

AFTER A LARGE mutual fund company in Houston merged with a London-based firm earlier this year, the chief technology officer realized an intranet would be the only sensible way to quickly link 17 far-flung offices.

The offices located around the world needed to be able to communicate and share information, but they didn't use the same technology.

"The ability for us to get on common platforms is going to take years, frankly, and we just can't wait that long in terms of our business requirements," said John Deane, chief technology officer at Houston-based AIM Management Group, Inc. AIM merged with Invesco Funds Group, Inc. in February to form a new

Intranet, page 59

Bosnia taps in to Internet

CONTINUED FROM PAGE 57

opposes many provisions of the peace treaty that ended Bosnia's war in 1995.

"One of our major efforts is to promote independent media . . . [and] improve access to information, which is still pretty limited in Republika Srpska," said Janet Garvey, public affairs officer at the U.S. Embassy in Sarajevo. The U.S. government has given financial backing to the intranet plan, she said.

Project Bosnia earlier set up an intranet in the Bosnian capital of Sarajevo, which suffered years of heavy bombardment by Serb forces. Serb gunners targeted several historic and cultural landmarks in the city, including libraries and museums that housed vitally important documents.

Plans for an academic computer network will link institutions in four cities

That intranet, still in its early stages, will be used first by the country's courts and human rights office to gain access to electronic documents where paper versions are unavailable. Other projects across the country bring legal information via intranet to regional government offices.

In the longer term, university volunteers are trying to help rebuild the collection of the National Library, where millions of books and several rare historical manuscripts were destroyed.

"When the National Library was burned down in August 1992, the card catalog was destroyed along with most of the collection," said Andras Riedlmayer, a bibliographer at Harvard University's Fine Arts Library. Riedlmayer has worked on several Bosnia-related reconstruction projects. "They were left with no way of even identifying what it was that they lost."

OCLC, Inc. in Dublin, Ohio, agreed to search its bibliographic database from thousands of member libraries for any Bosnia-related publications, creating a massive reference resource.

Enes Kujundzic, director of Bosnia's National Library, said the project will help not only people in his country, but also researchers worldwide who need information about the Balkan nation.

In addition, basic computer technology such as technical journals on CD is vital in helping to rebuild the library's contents, he said. With entire collections of medical, scientific and other magazines wiped out in the shelling, it would be expensive and time-consuming to handle all new paper copies.

"We don't have much staff at our disposal," he said. "In addition to online access, CD technology is very important."

RARE DOCUMENTS

Another reconstruction attempt, the Bosnian Manuscript Ingathering Project (*www.applicom.com/manu/ingather.htm*), seeks to find researchers around the world who might have visited Sarajevo to study and photocopy some of the rare manuscripts that were destroyed.

So far, the project has identified scores of manuscripts and rare photographs, and sponsors hope one day to be able to give access to the copies over the Internet.

Future plans within Bosnia call for creating an academic computer network across former front lines, according to Kemal Bakarsic, an assistant professor in the library studies department at the University of Sarajevo.

Computer technology may help access information destroyed in the bombardment of the National Library

That would incorporate Banja Luka University, which is under Serb control; two universities in Mostar, now split between Croat and Muslim sectors; Tuzla University in that multiethnic city; Sarajevo University; and the National Library.

Such a network would create links among former colleagues who were separated by nationalism and war. Technology, Bakarsic said, is helping to rebuild the country. □

'net phone service dials savings

CONTINUED FROM PAGE 57

"It means I save tens of thousands of dollars on phone calls over a year," Itayim said in an interview.

Itayim uses Net2Phone for his Internet calls, a service of IDT Corp. in Hackensack, N.J. As an independent distributor of Primestar satellite services for The People's Network, Inc. in Carrollton, Texas, he started using the IDT service nearly a year ago. He downloaded free software to his PC and prepays regularly for Internet telephone service by credit card.

The service lets him call any phone, including cellular phones, from his PC over a 28.8K bit/sec. modem. Soon, he will upgrade to an Integrated Services Digital Network connection. He talks over a headset with earphones and a microphone connected to his PC. When connections get garbled or delayed, he can switch between two Cyprus-based Internet service providers to improve calling quality.

The Internet service costs him about a half-cent per minute per call on top of IDT's rate.

"The quality is good the majority of the time," Itayim said. "Most people don't realize I'm using PC-to-phone, and when I do mention that, they are quite surprised."

On a typical day of five hours of international calls over the Internet, he said only 5% to 10% of the calls have problems, including garbled words or delays when one speaker interrupts the other.

QUALITY ISSUES

That reliability means "a large business wouldn't want to cold call [for a sale] on the Internet, but it depends on what you're selling," said Hilary Mine, an analyst at Probe Research, Inc. in Cedar Knolls, N.J.

Such quality concerns have kept large enterprises from buying Internet phone services on a large scale, analysts said. But dozens of companies provide either Internet phone services or hardware, including Internet gateway devices, and some of them have large customers with trials under way.

Lucent Technologies, Inc., in Basking Ridge, N.J., has had trials with business customers under way for a year but has had no large-scale takers.

IDT said that, after two years in the business, it has more than 100,000 customers — most of whom are residential users or small home-office users.

However, Rosemary Cochran, an analyst at Vertical Systems Group in Dedham, Mass., said companies might choose a trial service for workers within a company to call one another abroad. □

wrk/grp
Making New Platforms Work!

Migrating to Unix or Windows?

Our cross-platform solutions have been chosen by over a thousand companies, including A.C. Nielsen, AT&T and G.D. Searle.

Data Management Tools
- netCONVERT - Intelligent file conversion. Mixed character and binary numeric (packed) data between MVS, VM, Unix and Windows.
- TMS/tt - Mainframe-style tape management system for Unix and Windows.
- COSORT - High performance sort alternative for Unix and Windows.

Programmers Tools
- uni-SPF - ISPF-style editor, utilities and Dialog Management Services.
- uni-REXX - IBM's popular system control and macro language.
- uni-XEDIT - VM/CMS-style editor character mode or X-based GUI.

(800) 228-0255
sales@wrkgrp.com
http://www.wrkgrp.com

wrk/grp
The Workstation Group

Intranet aids merger

CONTINUED FROM PAGE 57

company, Amvescap PLC.

Rather than do a lengthy cost-benefit analysis, Deane and his electronic-commerce group forged ahead and created the intranet, confident that others would see the merits once their project was completed.

"You could see the light in senior management's eyes," Deane said. "For once, here was a technology that wasn't two years late and $5 million over budget. It just appeared."

"You could see the light in senior management's eyes"

With an annual global information technology budget of about $100 million and an Internet site already up and running, Deane's group had most of the necessary tools at its disposal. The group also hired two outside consultants.

"I just took a little out of here and a little out of there," Deane said. "Our intranet cost us a trivial amount of money."

Five people worked for three months at a cost of about $200,000, Deane estimated, and equipment was no problem. They took some back-end servers that weren't in use and added World Wide Web and certificate server software from Netscape Communications Corp.

The group also found it could deploy some of the same middleware that had been used for the Internet site, because both were performing similar functions.

AIM's Internet site not only provided general information to the public, but also allowed brokers and customers, armed with passwords, to access updated account balances and other data specific to their portfolios.

In a rather innovative twist, the Web site also offered audio updates with the latest financial news. When the market recently crashed, for instance, the AIM subsidiary got its top economists to provide up-to-the-minute commentary online.

Plans also call for audio to be used on the intranet site.

Activated earlier this month, Amvescap's intranet features an online photo directory of company employees, extensive information about various funds, research notes, portfolio ideas and market analysis data. And more is planned.

"We were amazed at all the information you could pull up quickly and easily," said Robert Graham, AIM's CEO and president. "It's a great way to keep all the units around the world apprised of what's going on."

Most companies, Deane said, tend to post only policies and procedures to their intranets.

"That isn't the way to really exploit the power of this," Deane said. "I think the power of this thing is to make our business units more productive, and therefore make more money."□

NEW PRODUCTS

DRESSELHAUS COMPUTER PRODUCTS, INC. has announced the Black Magic Internet Sharing Server, hardware and software that provides 20 users with simultaneous Internet access using one telephone line.

According to the Ontario, Calif., company, users need just one dial-up Internet account, an office Ethernet network (either 10Base-T or coaxial) and one phone line. The stand-alone computer's software is dedicated solely to handling traffic between the Internet service provider and users. It works with all network operating systems. User computers must be running Windows 3.x or better or Macintosh System 7.5 or better.

The model with a 56K bit/sec. modem costs $799; the model with a 33.6K bit/sec. modem costs $699.

Dresselhaus Computer Products
(909) 937-1137
www.dresselhaus.com

CONTIGO SOFTWARE has announced Itinerary Web Presenter 2.1, World Wide Web presentation software with real-time document delivery capabilities.

According to the San Diego, company, the software lets presenters deliver word processing, spreadsheet and other types of documents over the Internet into audience members' desktop applications during presentations.

The Java-based program includes compatibility with streaming audio and video, and pilot-controlled chat. Audience participants need only a Java-enabled browser.

The price is $195 for one presenter and up to five remotely dispersed audience members.

Contigo Software
(619) 278-5900
www.contigo.com

PRINTRONIX has announced PrintNet, hardware and software that lets users of Printronix's ProLine printers remotely manage and access the printers with a World Wide Web browser.

According to the Irvine, Calif., company, the PrintNet network interface unit has a built-in Internet home page, so administrators can call up the page over the Web and control printer setup and network settings.

Users can access the home page screen to see online/off-line condition, print queue jobs and paper tray status.

It is available for 10Base-2 and 10Base-T Ethernet connections.

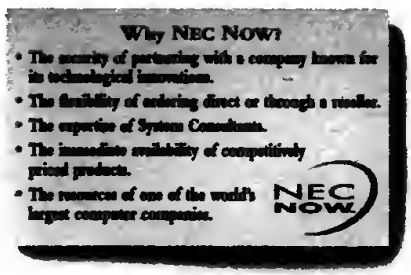
The cost is $495 as a factory option or a field installation kit.

Printronix
(714) 863-1900
www.printronix.com

It's 1½" thick and weighs just 4.9 lbs.

Introducing the NEC Versa® 5000. No notebook this thin and this light has ever offered this many features. But that should come as no surprise. NEC introduced the first notebook PC, and offers one of the world's most extensive lines. All available direct from our factory.

And with NEC NOW℠, you get to buy computers in the way that's best for you. Because we give you the choice of buying direct or working with a highly qualified NEC reseller partner. So call our System Consultants today. You'll find that, when it comes to helping you choose the right computer, they're not lightweights either.



©1997 NEC Computer Systems Division, Packard Bell NEC, Inc. NEC, Versa, and MultiSync are registered trademarks, VersaBay, ESM and Express5800 are trademarks, and UltraCore is a service mark of NEC Corporation, all used under license. Direction and MagicEye are trademarks and NEC NOW is a service mark of Packard Bell NEC, Inc. Leasing based on typical 36-month lease with purchase option. Other lease options may be available. Leasing arranged by third party leasing company to qualified customers. Prices do not include shipping or applicable sales tax, are valid in the U.S. only and are subject to change without notice. Products and specifications are subject to change without notice. Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. The Intel Inside logo, LANDesk and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. All other trademarks are property of their respective owners. *Maximum download speeds are limited to 53Kbps. Actual speeds may vary. Uploads travel at speeds up to 28.8Kbps. U.S. Robotics x2 modems require x2-compatible analog phone line and x2-capable service provider. See www.usr.com/x2 for details. Base model weighs 4.9 lbs. Other models may vary in weight.

But, with all these features, it's certainly no lightweight.

Versa 5000 Series

Common Features: PC 97 Compliant • PCI Bus Architecture with NeoMagic 128-bit 3D Graphics Accelerator • 2MB EDO DRAM Video Memory • Full Motion and Full Screen MPEG-1 Video Support • 32-bit CardBus Support • USB Port • Zoomed Video Support • Integrated 16-bit Stereo Sound • Full-Size Keyboard • UltraSlim VersaBay Accepts Warm Swapping of CD-ROM, Floppy Drive and Weight Saving Module (all included) • Back Infrared Port • Lithium Ion Battery • Software Bundle including MS Windows® 95, McAfee VirusScan, LapLink • 1-Year Free MitraCare™ Service with Option to Upgrade

Versa 5060X

- 166MHz Pentium® processor with MMX™ technology
- 13.3" XGA Active Matrix TFT Color Display
- 32MB EDO DRAM (80MB max)
- 3.2GB Hard Drive
- 20X max Variable Speed CD-ROM
- Upgrade to 64MB RAM, add $299
- 2nd Lithium Ion Battery, add $199
- NEC Xircom 10/100 CardBus Network Card, add $159

$3599

Versa 5060

- 166MHz Pentium processor with MMX technology
- 12.1" SVGA Active Matrix TFT Color Display
- 16MB EDO DRAM (80MB max)
- 1.6GB Hard Drive
- 20X max Variable Speed CD-ROM
- Upgrade to 32MB RAM, add $159
- U.S. Robotics® x2™ XJACK® 56Kbps® Capable Modem, add $159
- Versa PortBar™ 5000 with 10Base-T, add $249
- VersaNote™ Ballistic Nylon Compact Carrying Case, add $59

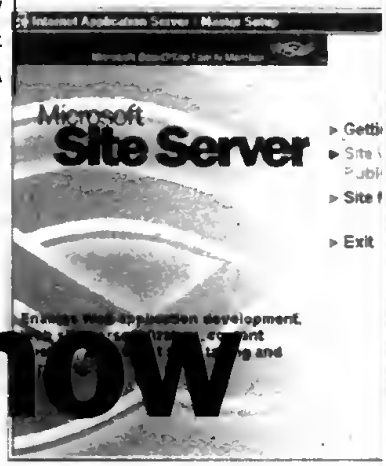
$2899

Call now for immediate delivery from our factory.

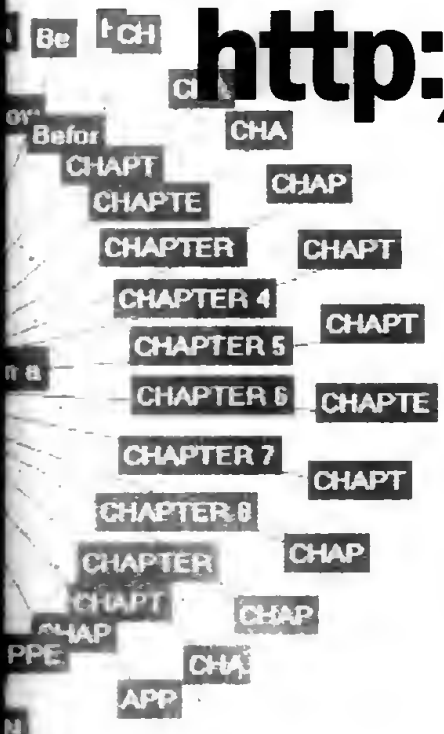
1-888-8-NEC-NOW

NEC

Windows NT
Site Server
Exchange
SQL
Proxy
Systems Management
SNA



You are now the master of your own http://universe.



Introducing Microsoft® Site Server. It's about a new level of control. For the first time, everything you need to run your sophisticated Intranet or Internet site is in one smart box, from creation to deployment* to maintenance; from electronic commerce** to cross-platform analysis and tracking. The concept is Web site lifecycle management. It means that while the Intranet or Internet may have a life of its own, you're in charge of it. It's orderly, it's logical, it's intelligent, and it's integrated with your Windows NT® Server.

www.microsoft.com/backoffice/siteserver/info

Where do you want to go today?® **Microsoft**

*To replicate content with content replication system, you must acquire at least one additional license to [illegible] **[illegible] Enterprise Edition.

©1997 Microsoft Corporation. All rights reserved. Microsoft, BackOffice, Where do you want to go today? and Windows NT are registered trademarks of Microsoft Corporation.

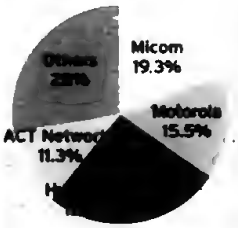
The Enterprise Network

LANs • WANs • Network Management

Briefs

1996 FRAD MARKET

A frame-relay access device (FRAD) lets equipment send traffic over wide-area frame links



Total: $346 million

Source: International Data Corp., Framingham, Mass.

Notes conversions trip up users

By Barb Cole-Gomolski

WHAT'S HOLDING THEM BACK?

CC:Mail users say the following has delayed their move to Notes:

- Lack of strong migration and compatible tools
- E-mail-centric sites see no reason to switch to Notes
- Some demand deeper discounts on Notes purchases
- Shortage of consulting services to support migration

IN THE ABSENCE of strong migration tools, some users of Lotus Development Corp.'s CC:Mail have taken their conversion to Notes into their own hands.

Many companies face increasing pressure to move to a more scalable and manageable mail platform, such as Notes or Microsoft Corp.'s Exchange, as their volume of electronic mail grows and support costs rise.

Most expect to save money by moving to client/server mail, which costs less to manage than LAN-based systems such as CC:Mail. And more companies want to move to messaging platforms that support collaborative applications, said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass. But getting from CC:Mail to Notes has been difficult, especially for companies that have tens of thousands of seats.

Users at some of those orga-

Notes, page 65

Detecting intrusions is only a start

By Laura DiDio

NETWORK SECURITY

PROACTIVE INTRUSION detection technology for Windows NT and Unix networks will take center stage at the 24th Annual Computer Security Institute (CSI) Conference this week in Washington.

"Windows NT is the hottest single topic in the security industry right now. And despite what people think about the maturity of the Unix operating system, Unix security is also high on businesses' lists [of security concerns] because hackers are still pounding away at Unix," said Patrice Rapalus, CSI's director.

Jim Marshall, an information delivery security consultant at The Dow Chemical Co. in Midland, Mich., said his company works diligently to keep up with the latest trends, products and advisories. Dow has 35,000 Windows NT users.

But educating Dow's users on the pitfalls of inadvertent security breaches is one of Marshall's biggest tasks. "The worst security breaches we've had involve users not paying attention to where they store documents. They often mistakenly store classified documents in public queues," he said.

HACKER THREAT

Careless users are a big concern, but so is the increasing number of hackers who are aiming at NT, said Bill Malik, an analyst at Gartner Group, Inc. in Stamford, Conn. "That's where the action is. A successful NT hack will get them 15 minutes of fame," he said.

The host of new intrusion detection devices go beyond audit trails and event logging software. Many were specifically designed to help defend intranets, extranets and remote offices.

CyberSafe Corp. in Seattle will introduce its TrustBroker Security Suite that runs on Windows NT, Unix and IBM MVS systems. TrustBroker provides users with a single sign-on to multiple systems, and it supports public-key and secret-key authentication mechanisms.

The TrustBroker Suite creates individual trust relationships on one set of systems, then "brokers" that trust, vouching for a user to other machines across

Network security, page 68

Simple solutions satisfy

▸ Users pick basic management tools

By Patrick Dryden

THERE'S ALWAYS a place for cheap and simple management software — even if strategic goals call for an industrial-strength tool kit, say users of a little-known network manager from Ipswitch, Inc. in Lexington, Mass.

"Big Unix platforms are worthwhile, but there's no need for a Cadillac when a Toyota will do," said Mark Watson, manager of network opera-

Simplicity, page 68

Customized views through WhatsUp Gold enable help desk users to quickly check the status of servers and networks

INTERNETWORKING

3Com switch aims at net core

By Bob Wallace

SEVERAL 3Com users said the vendor's new advanced switch will meet their long-term networking needs, but analysts said the vendor still faces challenges and stiff competition in the data center switch market.

3Com Corp. last week announced CoreBuilder 9000, a robust data center switch that can support Gigabit Ethernet or Asynchronous Transfer Mode (ATM).

National Board of Medical Examiners' Steve Lopez: This is a great step forward for 3Com

It also has built-in high-speed routing, which makes it a Layer 3 switch. It is due in March.

The Gigabit Ethernet and ATM support means users don't have to buy different boxes for different high-speed switch technologies. Also, Layer 3 switching can save users money by weaning them off or obviating the need for routers.

ANOTHER OPTION

"This is a great step forward for 3Com's switching effort," said Steve Lopez, network manager for The National Board of Medical Examiners in Philadelphia. "ATM isn't in our future, but it's good to have a choice." He instead plans to deploy Gigabit Ethernet.

"This is an impressive box," said Peter Bissonnette, a communications design analyst at Lockheed Martin in Pittsfield, Mass. "If it does what they say it can do, I'll be able to eliminate one router and move the other out to the WAN."

The firm would use the CoreBuilder 9000 to aggregate traffic from 25 smaller switches, which is what the two routers do now.

3Com, page 68

Fibre Channel Switching Solutions for Your Hard-Pressed Enterprise

McDATA has a grip on your future with high-availability Fibre Channel switches.

We are the warldwide leader in ESCON switching solutions. Soon you will know us as the leader in the Fibre Channel switching market.

McDATA is bringing its experience to play in the apen systems arena with a family af high-availability Fibre Channel switches.

They're ready now. The future is now. Are yau ready ta switch to the future? Call 800-545-5773 ar visit www.mcdata.cam.

McDATA

Switch to the future

See us at Comdex in the Fibre Channel Solutions rpom N250.

©1997 McDATA Carporotion. McDATA, celebroting its 15th onniversary, has offices in Calarada ond Ontorio. Tel. 303.460.9200
Member Fibre Channel Associatian and Fibre Channel Loop Community. ISO 9001.

Notes conversions

CONTINUED FROM PAGE 63

nizations said they need migration tools that not only convert E-mail, directory information and data archives from CC:Mail to Notes, but also tools that allow the two systems to coexist.

TOUGH TO MANAGE

Lotus offers such tools, but users call them difficult and unreliable.

"You can't migrate [to Notes] over the weekend," said Jim Arcure, manager of systems integration at New York-based Colgate Palmolive, which has 26,000 CC:Mail seats.

After struggling with an unstable Lotus-CC:Mail Message Transfer Agent for nearly a year, the company wrote its own migration wizard to move data from CC:Mail to Notes.

To date, the company has moved 60 users in the IS department to Notes. "This [migration] is killing us," Arcure said. He said he expects to move 20 or 30 users per day using the company's migration wizard.

Other users, such as Belcan Engineering Group, Inc. in Cincinnati, which has 1,000 CC:Mail seats, are taking a more phased approach.

The company lets users receive E-mail from the Internet in CC:Mail, and it is considering moving some users to Post Office Protocol 3 (POP3) clients.

Those clients will still work if the company decides to install Domino as a messaging server.

Senior network specialist Paul Badowski said a full migration to Notes may occur when the "technological and end-user requirements demand it."

Arcure said he considered POP3 clients an interim step between CC:Mail and Notes but determined that most users required the full Notes client.

Matt Cain, an analyst at Meta Group, Inc. in Stamford, Conn., said most companies can buy themselves a few years if they wish to stay on CC:Mail by taking advantage of the product's Internet hooks.

But in the long term, they will benefit from moving to a more stable mail system, Cain said.

Over time, the migration should get easier as Lotus adds more CC:Mail-like features to Notes, makes the CC:Mail client more Notes-like and perhaps offers financial incentives to companies to move to Notes, Cain said.

Lotus officials acknowledged that the company's migration tools need work. Officials said that revisions are in the works that will make the tools easier to use.□

NEW PRODUCTS

MULTI-TECH SYSTEMS, INC. has announced the MT5612BZLX-NT, a combination Integrated Services Digital Network (ISDN) and 56K bit/sec. PC Card modem for mobile users.

According to the Mounds View, Minn., company, the card uses 56K or 33.6K bit/sec. speed over a telephone line, depending on the server or client modem being called. Its Basic Rate ISDN modem supports link speeds up to 128K bit/sec.

The card also can make calls to analog and ISDN services from the same single ISDN line, so users with ISDN can make data calls to remote applications that are serviced by analog modems.

The modem costs $360.

Multi-Tech Systems
(612) 785-3500
www.multitech.com

TRAVELING SOFTWARE, INC. has announced Point B Remote Net-Accelerator, client/server software for Windows NT and Novell, Inc. NetWare platforms that speeds up remote file access.

According to officials at the Bothell, Wash., company, the software works by placing previously accessed files in the remote computer's cache and by grouping and transferring file requests in compressed blocks.

The software was designed to increase application response times by 300% over remote access server or virtual private network remote node connections.

Pricing begins at $1,999 for one server and 10 remote clients.

Traveling Software
(425) 483-8088
www.travsoft.com

MIDNIGHT NETWORKS has announced Avalanche/RA, a hardware and software tool for remote access performance testing in large enterprises.

According to the Waltham, Mass., company, Avalanche/RA is a Pentium-based workstation that can establish Point-to-Point Protocol connections on up to 64 asynchronous serial ports and send data traffic in both directions.

Avalanche/RA measures performance statistics such as data traffic latency and throughput, total packets sent and received, the number of attempts required to bring up a connection, the time required to bring up a connection, and packets dropped.

Avalanche/RA costs $39,995.

Midnight Networks
(617) 890-1001
www.midnight.com

MANGOSOFT CORP. has announced Medley97, networking software that lets Windows 95-based PCs share disk space, memory and peripherals.

According to officials at the Westboro, Mass., company, the software can create a network with up to 25 PCs in which all the attached PCs share resources and act as both a client and server. For example, if 10 users contribute 250M bytes to the pool, a virtual Medley drive listed under "My Computer" will have a volume of 2.5G bytes.

A two-seat starter kit costs $249. Additional seats are $199 each.

MangoSoft
(508) 871-7300
www.mango.com

THE LEADERS FOLLOW LAWSON SOFTWARE.

- Web-deployable enterprise applications—today
- Self-Evident Applications™ featuring zero training browser technology
- Activity-based management
- Workflow-automated processes
- Self-service capabilities
- Financials, human resources, procurement and supply chain management
- Enterprise business software provider to these leading companies:

McDonald's Corporation
Walgreen Company
Sears, Roebuck and Company
The Penn Traffic Company
Dayton Hudson Corporation
Polo Ralph Lauren
Wilsons The Leather Experts
Costco Companies
SUPERVALU INC.

Find out more @ www.lawson.com/guide

LAWSON™

Leading Edge Technology Without The Attitude™

©1997 Lawson Software

The new Armada 7300 is the notebook that balances mobility with the high performance of a desktop. At only 6 lbs, it comes with up to a 166MHz Pentium® processor with MMX™ technology, up to 2.1GB hard drive, up to 32MB of RAM (upgradeable up to 128MB), a 33.6K modem

© 1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. Armada is a trademark of Compaq Computer Corporation. The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Other products mentioned may not reach 56Kbps and will vary depending on line conditions.

(upgradeable to K56flex protocol[1])[2], a 12.1" CTFT display and expansion base options. In short, the Armada 7300 gives you the power and freedom to work however and wherever you darn well please. To locate a Compaq Authorized Reseller, call 1-800-943-7656 or visit www.compaq.com/products/portables/.

COMPAQ

may be trademarks or registered trademarks of their respective companies. [2]7350MT Model only. [1]Upgrade planned for year end. The K56flex protocol is designed only to allow faster downloads from K56flex compliant digital sources. Maximum achievable download transmission rates are currently unknown.

Network security

CONTINUED FROM PAGE 63

the enterprise. The TrustBroker Security Suite consists of a client, server and software developers kit. It is available now. Pricing ranges from $578,000 to more than $2 million.

Fortress Technologies Corp. in Tampa, Fla., will unveil its NetFortress Remote software. It includes a smart encryption capability that recognizes an unlimited number of "secure" network and user addresses, and automatically encrypts communications to those addresses. The NetFortress Remote will ship Dec. 8. Pricing will be announced at the CSI conference. The conference will feature seminar topics including basic computer security, advanced secure electronic commerce, and computer crime and forensic analysis. And attendees will get to talk to their enemies on the phone. There will be a teleconference with hackers in a special session Tuesday. □

SECURITY ALERT

A recent survey on computer security found the following:

- **More than half of all respondents reported unauthorized use of their computer systems within the last year.**
- **47% of users reported a security invasion via the Web, up 10% over last year.**
- **50% have no emergency response team.**
- **60% have no network intrusion policy.**
- **50% of the companies that have an intrusion policy still have no policy for preserving evidence.**

Base: 563 respondents from government agencies, universities and Fortune 500 businesses

Source: Computer Security Institute, San Francisco; FBI

Users laud 3Com switch

CONTINUED FROM PAGE 63

Steve Toy also sees Layer 3 switching as a router replacement. "We think we can use it to eliminate some routers in the interior of our network," said Toy, an assistant network systems engineer at SAS Institute, Inc. in Atlanta. That means he could move those boxes to the network periphery to be used on the wide-area network, he said.

"And as far as Gigabit Ethernet is concerned, we're thinking of it as something further down the road," he said.

Users are anxiously anticipating the CoreBuilder 9000, but analysts stress 3Com has challenges it must meet to attract users in the high-end switch market. Part of the problem is that 3Com sells three main high-end switches whose capabilities and purposes often overlap, analysts contend.

"That causes confusion with the buyer," said Craig Johnson, an analyst at Current Analysis, Inc. a consulting and research firm in Ashburn, Va. "On the surface, their positioning looks reasonable. But when the rubber hits the road, the question of 'Which one do I bet on?' is tough to answer."

But the product mix makes sense if users look at the CoreBuilder 9000 as the data center switch and use the other three products to feed it traffic, he said.

TAKING TOO LONG

But one analyst said 3Com is waiting too long to ship the new switch.

"3Com should have shipped these products six or nine months ago instead of [waiting until March]," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "Cisco [Systems, Inc.] has been sowing seeds in 3Com accounts."

Also, 3Com admitted it faces stiff competition from Bay Networks, Inc., which several months ago bought Gigabit Ethernet switch vendor Rapid City Communications, Inc. □

Simplicity

CONTINUED FROM PAGE 63

tions at credit-card processor Nova Information Systems, Inc. in Atlanta.

Ipswitch's WhatsUp Gold supplies the "first line of defense" — basic status reports, alerts, diagnosis — for Nova's 150-node transaction-processing network without the hefty cost and training of the leading tools, Watson said.

Enhancements being introduced at Comdex/Fall '97 this week in Las Vegas may tempt more information systems managers to use the tool to fill some immediate mapping and monitoring needs.

Version 3.5, slated to ship next month, recognizes connections and devices running NetWare IPX from Novell, Inc. as well as TCP/IP intranets or extranets. Its browser interface can be modified for even simpler access by operators anywhere. And WhatsUp Gold can graphically reveal live statistics and store them for historical analysis.

"This is dirt cheap and tells us almost everything we conceivably need to know," said Bobby Anderson, webmaster at GEICO Direct in Washington.

The auto insurer manages its network with Optivity from Bay Networks, Inc., but Anderson watches his 25-node site for customers and internal users with WhatsUp Gold. "It's a reasonable way to monitor what really counts without making a strategic platform decision or budget investment," he said.

WhatsUp Gold runs on Windows 95 or Windows NT and costs $695 for unlimited monitored devices.

At Elizabeth Arden Co., the tool "came in the back door from somebody skating the World Wide Web," said Steve Steffek, a senior technical specialist. He had sought an easy way for help desk staffers to learn quickly about network outages at the New York-based makeup manufacturer.

"We can teach them to use WhatsUp Gold in five minutes, and within an hour they are customizing it," Steffek said. Now they see problems before they hear about them from the outsourcer managing their network using IBM's NetView, he said.

Setup is "incredibly quick" — two hours compared with a week-long course for OpenView Network Node Manager, the market leader from Hewlett-Packard Co., said Bob Brent, a network administrator at Aramark Uniform Services, Inc. in Burbank, Calif.

Though it's not the only tool Aramark uses to manage its 233-site network, WhatsUp Gold provides an easy way to monitor events and elements without deploying OpenView to 15 help desk staffers, Brent said.

THE BEST TOOL FOR THE JOB

The Windows NT platform and the Web are forcing down the cost and complexity of management, so IS managers can pick the tool that best fits the problem at hand, said Theo Forbath, a consultant at Northeast Consulting Resources, Inc. in Boston.

Simpler and less expensive Windows versions of popular Unix tools are available for help desks or casual users, and browser access is becoming common. Free tools similar to WhatsUp Gold can be found on the Internet. They include IntraSpection from Asante Technologies, Inc. in San Jose, Calif.

There's no question that strategic relations with big vendors still matter, Forbath said. But tactical tools can quickly pay for themselves. □

Software

Databases • Development • Operating Systems

Briefs

"I've been in the technology wars for 15 years. I've lived through Oracle vs. Informix and most recently Netscape vs. Microsoft Internet Explorer. And you know what? Who cares? Our business is making life easier for users. Who cares if the tools to do that are written in CORBA or DCOM?"

– David Edelstein, vice president of information management, Bristol-Myers Squibb Co.

Wall Street gets the message

By Tim Ouellette

IF YOU MADE a desperate trade during the stock market plunge late last month, you can probably thank middleware for getting that trade through.

Even as stock markets were slammed with more than a billion daily trades, packaged middleware applications worked behind the scenes to churn those deals through, win or lose.

Middleware, in this case messaging middleware, lets applications on different computer platforms exchange data smoothly, and it can hold that data in secure "queues" if the receiving system is down or busy.

For example, at Discover Brokerage Direct, an online brokerage in San Francisco, it wasn't the middleware that caused the slowdown, it was the Internet.

"I had expected the slowdown to be in the processing on the back end," said John MacIlwaine, Discover's chief technology officer.

But Discover uses NeonNet, software from New Era of Networks, Inc. in Los Altos, Calif. NeonNet takes downloads from a central Wall Street mainframe clearing system and updates Discover's Unix databases. That gives investors the exact information they need to trade online and then ensures that their trades will be reflected properly back to the central market systems.

"Should activity exceed normal transaction levels, the [middleware] queuing allows every-

Middleware, page 70

Users cautious on IBM middleware

By Sharon Gaudin

CUSTOMERS ARE waiting to see if IBM's new middleware technology will keep its promise to give them more time to focus on an application's business logic by reducing the time they spend building the hooks and ladders of back-end communication.

IBM shipped an early release version of its Component Broker middleware to a small number of users last week with general availability set for the first quarter of next year. The middleware was designed to offer back-end connections, enabling users to treat legacy applications on diverse systems like objects that can be culled and dropped into new applications.

"What this is designed for is of critical importance," said Fima Katz, chief technology officer at Concord, Calif.-based Concorde Solutions, Inc., the information systems arm of U.S. financial giant Bank of America Corp. "If Component Broker allows me to integrate with those back-end systems where I have all of my information, then that's what I'm looking for."

But Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass., is withholding judgment until she

Users cautious, page 74

Java group offers spec

▶ *Hopes to avoid 'Webtop' war*

By Gordon Mah Ung

IN AN EFFORT to avert a war that would dilute the potential of thin clients and leave Windows unchallenged, vendors of Java and network computers are negotiating a common ground.

Lotus Development Corp.; its parent, IBM; Sun Microsystems, Inc.; and Oracle Corp. have announced a joint project called Webtop, or Webtop98. The specification, which would provide a common set of system services and application programming interfaces, was designed to assure developers that their Java applications will work unmodified on a range of network computers, PCs and other devices. Incompatibilities among such devices can create only havoc and benefit Microsoft Corp., observers said.

"Microsoft owns the leading user interface in the Microsoft environment. That is what's up for grabs," said Michael Sulli-

Java spec, page 70

REVIEW▶ *Sapphire/Web Version 4.0*

Sapphire melds Web/databases

By Ross M. Greenberg

IT TOOK ME FOUR days of battling installation problems to reach the conclusion that Bluestone's Sapphire/Web 4.0 is pretty cool — very much what the doctor ordered for solving enterprise World Wide Web-based database access woes. Accessing your database from pretty Web pages isn't a simple problem to solve if you want to provide for security and a true client/server environment.

I wasted time installing Sapphire/Web atop an older version of Java (Bluestone ships with Java Development Kit 1.1).

Related installation/configuration error messages are nearly useless, and pertinent information on those and other installation problems are hidden away in otherwise good tutorials and manuals. This is a complex product, so time spent spelunking through those items is more of an investment than it is in

Sapphire, page 75

REVIEW▶ *Sapphire/Web, Version 4.0*

Bluestone Software, Inc.
Mount Laurel, N.J.
(609) 727-4600
www.bluestone.com

Pros: Powerful Web-to-database development package with thought-out bells and whistles. Interfaces easily with standard databases and ODBC. Nice GUI development environment.

Cons: Touchy about Java and server versions. Installation and configuration error messages aren't helpful. Learning curve is steep to start.

Middleware on the Street

CONTINUED FROM PAGE 69

thing to go through without losing the data," MacIlwaine said.

That pretty much happened that week, with spikes during opening and closing times. Without the middleware, we would have been prone to traffic jams," he added.

In the past, most securities houses built their own proprietary middleware packages to handle trades and exchanges between different systems. But the high costs of in-house development and maintenance have led many of those businesses to accept packaged applications from vendors such as New Era; IBM; BEA Systems, Inc. in Sunnyvale, Calif., and Tibco, Inc. in Palo Alto, Calif.

"Financial services are getting big-time into packaged middleware applications today," said Jim Johnson, chairman of The Standish Group International, Inc. in Dennis, Mass. "Today, if they try to grow their own [middleware], in a lot of cases it becomes a failure before it is even out the door" because of the limits proprietary systems place on how fast a firm can react to market changes today.

Although the Philadelphia Stock Exchange hadn't yet installed Talarian Corp.'s SmartSockets middleware when it survived last month's deluge, it still expects to get rid of its homegrown procedure calls.

"SmartSockets will bring in fault tolerance that is not completely there with our own software now," said Thomas Wittman, vice president of trading systems.

Observers said it is hard in many cases to pinpoint exactly how well the commercial middleware packages handled the high volumes because so many other pieces of the transactions could have had problems. And many firms did have bottlenecks that delayed trading and left investors at a loss. □

We take every measure to make you comfortable with your future.

As an integrated training and consulting company, Mentortech can uniquely pinpoint and teach the technology skills that are most in demand.

We provide:
- **superior classroom technical training**
- **cutting edge technology-based training**
- **professional consulting services**

Our training and consulting services are custom-designed for individuals and corporations by top industry professionals. So IT professionals increase their value to corporations and corporations are assured they have the most knowledgeable, up-to-date staff possible.

No matter what pair of shoes you're trying to fill, Mentortech can help you find the perfect fit as quickly and as comfortably as possible.

No pinching.
No rubbing.
No blisters.

For information, please call Terry Steinberg, EVP
1.800.727.6583, ext.216
info@mentortech.com
www.mentortech.com

Mentortech

Microsoft SOLUTION PROVIDER

Authorized Technical Education Center

Premium Partner Authorized Education Center

Java group offers spec

CONTINUED FROM PAGE 69

van-Trainor, a program director at International Data Corp. in Framingham, Mass. "We have to stay tuned for the Webtop wars. The Webtop wars could seriously shift in Microsoft's favor if people deploying Webtops all deploy something different."

So far, the companies have released few details of what the specification will be or when it will be released. A Lotus spokesman said the company is aiming for the middle of next year.

"There hasn't been a bullet-point list the industry can bite into," said Ron Rappaport, an analyst at Zona Research, Inc. in Redwood City, Calif. Rappaport said many speculated that it would include file, print and directory services.

Rappaport said he hopes the specification will apply to other thin clients besides network computers to widen its appeal.

Chris Joblen, director of Internet business development at Cambridge, Mass.-based Lotus, said the spec won't exclude PCs and will be an open published standard. The companies will license the specification to manufacturers and software developers to maintain consistency.

Andrew Diamondstein, an analyst at Giga Information Group in Cambridge, Mass., said the companies have to be careful not to confuse the market by presenting Webtop-compliant hardware as a single type of device.

"If you can create one standard, you [create the idea] that it really is one platform. [The specification] could create some market confusion as to what the platform is," he said. □

LOTUS ANNOUNCES AN ENTIRELY NEW CONCEPT IN DOWNSIZING

THE COST OF COMPUTING ►

.WORK THE WEB.

PAY ONLY FOR WHAT YOU USE AND BLOW YOUR BUDGET ON BONUSES ► NOW INTRODUCING eSUITE ► THE NEXT BIG GIG IN COMPUTING

A BREAKTHROUGH IDEA THAT GIVES YOU COMPLETE CONTROL. Lotus eSuite™ is your first real reason to consider network computing as a viable desktop strategy. eSuite WorkPlace™ is an integrated set of Java™-based applets combined with an easy-to-use interface, designed to bring the right tools to the right people.

eSuite WorkPlace means desktop applications reside on the server. It's like your own central command post, providing more control for easier maintenance. eSuite WorkPlace applets are small, fast and modular. You load only those tools that are essential to users. The WorkPlace desktop gives users a single point of access to everything they need -- business productivity applets, legacy data, e-mail and the Web. That equates to greater productivity and a sizable reduction in overall software deployment, maintenance, training and support costs. Which all adds up to a computing budget you can swallow, or even spread around a bit.

eSuite WorkPlace IS CROSS-PLATFORM, BUILT FROM THE GROUND UP IN JAVA. eSuite WorkPlace runs on any operating system. There's no need to support separate versions for different platforms. And it's task-focused, snappy and easy to use, so you won't be running from user to user dishing out advice. Think of the dollars saved, the hours gained, the nuisance avoided. Lotus eSuite looks like a lot more than the next big gig in computing. It's the advent of an entirely new way to Work the Web.

Next steps on your agenda: learn more about eSuite technology. Give us a call at 1 800 872-3387, ext. D604. Or visit us at our website **www.esuite.lotus.com** for more information.

DESIGNED FOR JAVA

COMPACT, EASY-TO-USE APPLETS

INTUITIVE USER INTERFACE

EASY WEB ACCESS

e-business

Lotus
Working Together

In Canada, call 1 800 63 LOTUS. © 1997 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus and Working Together are registered trademarks and eSuite, eSuite WorkPlace and Think the Web are trademarks of Lotus Development Corp. Java is a trademark of Sun Microsystems, Inc. The e-business logo is a trademark of International Business Machines Corporation.

Users cautious on IBM middleware

CONTINUED FROM PAGE 69

sees the middleware and can gauge its ease of use and complexity.

"This sounds great. Critical. But IBM tends to get complicated," Boucher said. "I hope this isn't the case, but I need to see it."

Component Broker uses Common Object Request Broker Architecture (CORBA) to link browsers or other front-end applications to information and applications stored on disparate systems on the back end. It also adds common object services, transaction management and a component tool kit that offers a visual development environment.

Component Broker was designed to communicate with CICS servers and multiple databases, allowing developers to treat the applications like reusable chunks of software to speed the building process of new applications.

COMPONENT BROKER HIGHLIGHTS

IBM's Component Broker was designed to let users build applications using legacy applications, which may be on various back-end systems. Component Broker includes the following:

- **Object-oriented middleware that connects disparate back-end systems**
- **A cross-platform CORBA that lets new applications communicate with legacy systems and lets legacy systems communicate with one another**
- **Connecting code that lets users treat back-end applications as objects that can be dropped into new applications**
- **A visual application development environment for managing the new objects**

Boucher noted that Component Broker combines some of IBM's powerful middleware technologies — transaction management, object management and an object-oriented visual development environment — with CORBA's connectivity technology. She said Component Broker competes with Microsoft Corp.'s Distributed Common Object Model, Microsoft Transaction Server and MQS — single technologies that aren't packaged together.

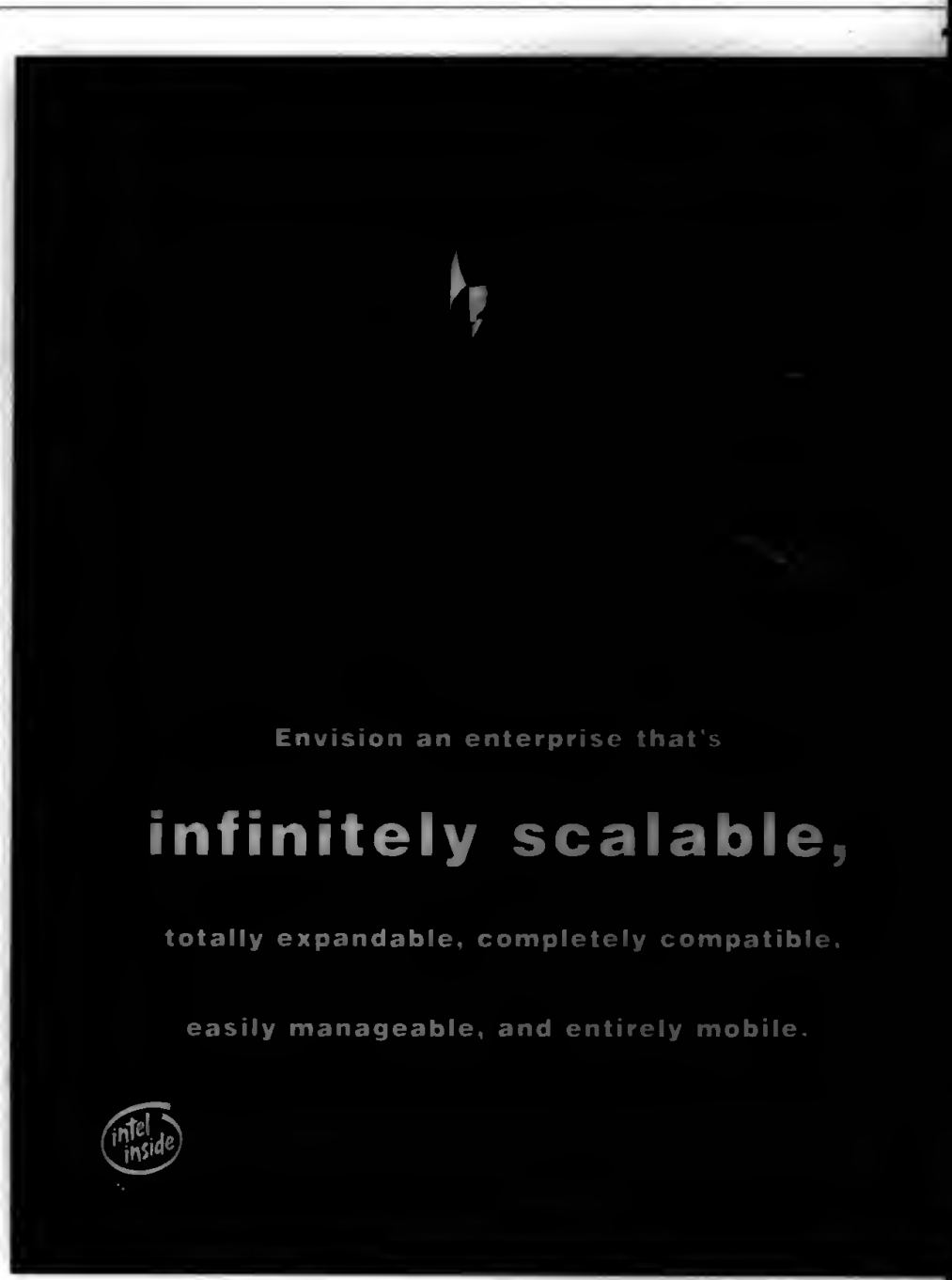
Boucher also said that this technology, if it works, could mean a lot of time savings to the 58% of the middleware market that uses IBM technology. That's because writing code for this kind of connectivity generally takes up an estimated 70% of a developer's time.

But Boucher said she hopes Component Brokers' ease of use matches its power.

"As typical IBM middleware, it provides a lot of function, but maybe more function than anyone would need," she said. "They had 250 developers working on this thing, so it's probably going to be somewhat cumbersome."

Katz, whom IBM has briefed on Component Broker several times but who hasn't used it yet, said he is eager to see how easy the product will be to use. "How complicated will it be to develop with?" he asked. "Will we get it on other platforms like Solaris? Will it meet these wonderful promises?"

But Katz hasn't been able to wait for IBM's middleware. He built the necessary connections using CORBA and Java to access his disparate back-end information. "We couldn't wait, but we're not married to any technology," he said. "If it works, great. We will go with the great technology." □



Sapphire gives data access

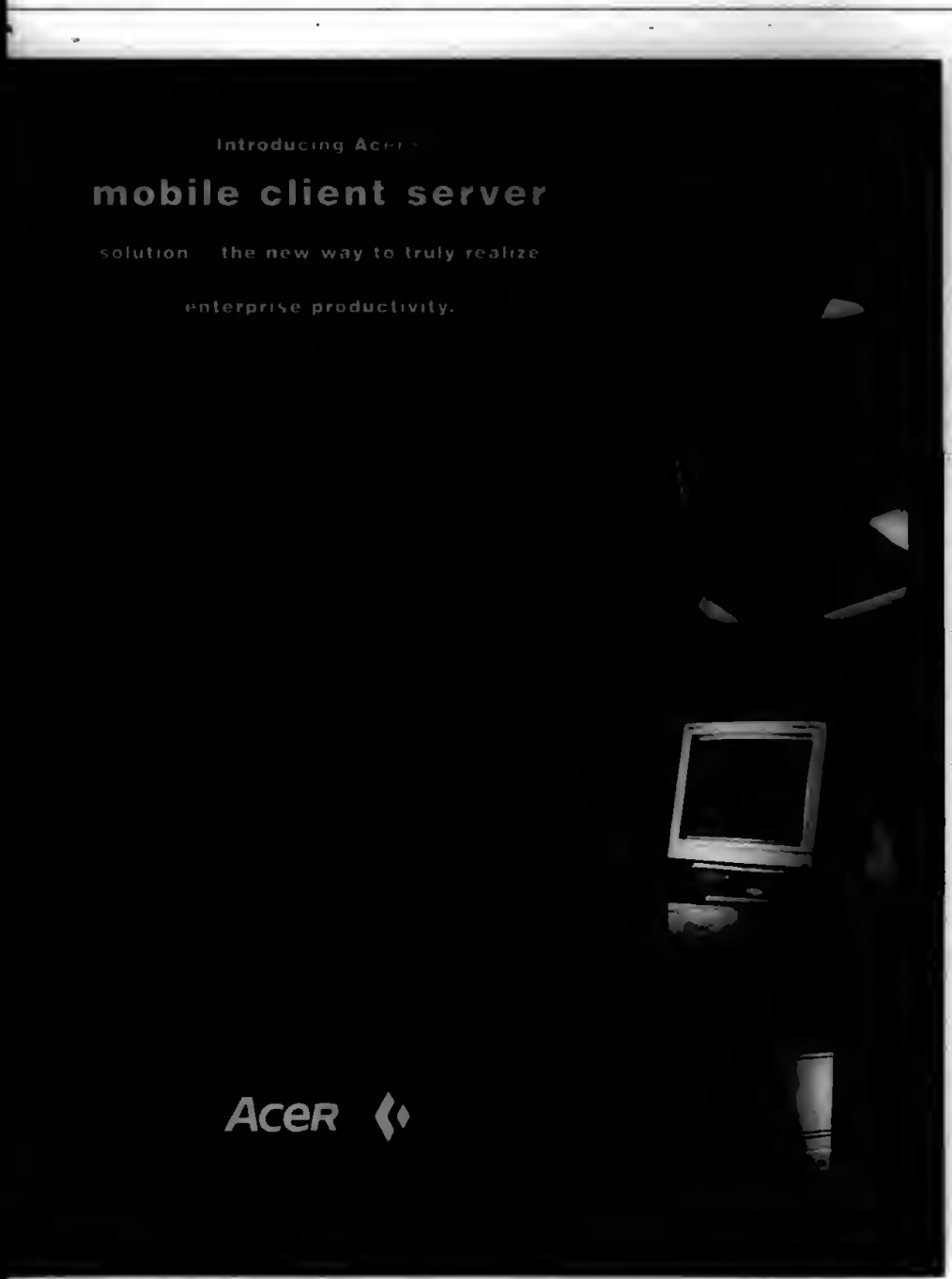
CONTINUED FROM PAGE 69

lesser products, paying off in the long run. In my case, my peculiar Windows 95 configuration was the likely culprit, but installation shouldn't have been such a big problem in any case. After I resolved the installation issues, Sapphire/Web performed marvelously.

The product is a well-designed graphical user interface-based rapid application development tool with native hooks to all major database products and access to other database products through Open Database Connectivity (ODBC). It lets designers create Web pages that can access client- or server-based databases through an impressively complete and virtually transparent multitier approach.

Splitting a database-centric application into low-overhead server and client portions is the first part of a relatively seamless operation. First, the Web page designer builds the Web pages using traditional tools, designing Web pages for readability, transportability among browsers, resolutions and so forth. Then the pages are tied through their anchor points to the next page through a "bind," Bluestone's moniker for the interface among a page's entries for database queries, the actual query and mapping the output to the target page.

The application creates the target page dynamically based upon the output of the query, which is filtered through templates that structure the data for presentation as the fully populated page is created.



FAST DEVELOPMENT

Optionally, the output can be fed through additional bindings and/or callback routines for further transformation and filtering. Those callbacks can use languages such as C, C++ and Java.

For testing purposes, I created a simple application: in essence a database-driven cash register, keeping current and running inventories on the server (a Microsoft Personal Web Server was used in this case), with full data-entry and database verification. Running multiple instances of the client proved that running Sapphire/Web in a real-world, real-time environment is not just doable but also relatively easy to accomplish. It took me about two days to learn the basics of Sapphire/Web, then only about a day and a half to write the application. The easy interface Sapphire/Web provided both to my database and some homegrown data verification and formatting routines made that possible.

Data entry verification and validation are easily accomplished on the client side using canned interfaces to JavaScript, VBScript or ActiveX procedures and routines that are included. It's pretty painless to provide database access through Bluestone's efficient application development interface.

Security and secure access to corporate databases comes by a variety of means, starting with traditional log-in/password challenges that stem from your database management system and server operating system. More secure third-party Web commerce access-control and encryption packages are also included in Sapphire/Web.

Sapphire/Web offers direct connections to major databases and has ODBC, Java Database Connectivity (JDBC), ActiveX Data Objects, Data Access Objects and Remote Data Object connectivity interfaces, although I only quickly tested the ODBC and JDBC interfaces.

Keeping the testing/development environment only a few keystrokes away from full enterprise deployment allows for hot updating of the appearance and interaction of the Web pages. Sapphire/Web runs on just about any Web server, according to Bluestone, and the development package runs on many popular platforms.

Sapphire/Web is a powerful system and, with no runtime license, a good buy.□

Greenberg is a freelance writer in New Kingston, N.Y.

THE ONLY DIFFERENCE BETWEEN IT AND YOUR DESKTOP IS ABOUT 50 POUNDS.

Don't blink. Micron™ TransPort® XKE, one of the fastest notebooks in the business, just got faster. Our sleek, high-performance TransPort XKE boasts Intel's 200MHz or 233MHz Pentium® processor with MMX™ technology, 20X CD-ROM drive and 128-bit graphics accelerator. And now the TransPort XKE comes standard with Dragon Systems' innovative new NaturallySpeaking Personal voice recognition software, so you can create documents, check spelling, and more by talking — not typing. This cutting-edge voice recognition software is optional on the TransPort VLX, our no-nonsense, entry-level notebook. Micron TransPort notebooks are always pre-installed with Microsoft® Windows NT® Workstation or Microsoft Windows® 95, and you always get our award-winning, 24-hour customer support and some of the best limited warranties in the business. When it comes to notebooks, Micron's the real desktop performer.

MICRON TRANSPORT VLX

166MHz Intel Pentium processor with MMX technology
16MB EDO RAM (40MB max.)
1.6GB hard drive
16X modular CD-ROM drive
Li-Ion battery
12.1" TFT SVGA, 800x600 display

STANDARD FEATURES
256KB L2 pipeline burst cache
PCI bus with 128-bit graphics accelerator
MPEG compatible
Zoomed Video-ready
Touchpad pointing device
Microphone and 16-bit stereo sound
2-way infrared port
Modular floppy drive
Microsoft Windows 95 and MS® Plus! CD
5-year/1-year Micron limited warranty

$2,249
Bus. lease $78/mo.

MICRON TRANSPORT XKE

233MHz Intel Pentium processor with MMX technology
64MB EDO RAM
5GB removable hard drive
13.3" TFT XGA display

STANDARD FEATURES
512KB pipeline burst cache
128-bit, 2MB DRAM graphics
20X CD-ROM drive with AutoPlay™ technology
Dragon Systems' NaturallySpeaking Personal voice recognition software
Pick-a-Point™ dual pointing devices
Integrated 33.6Kbps modem, full duplex
Microsoft Windows 95 and MS Plus! CD
Microsoft Office 97 Small Business Edition
5-year/3-year Micron Power™ limited warranty

$4,999
Bus. lease $158/mo.

TRANSPORT OPTIONS

VLX OPTIONS	
24MB EDO memory upgrade (40MB total)	add $289
Dragon Systems' NaturallySpeaking Personal voice recognition software	add $69
Microsoft Windows NT 4.0 (from Windows 95)	add $99
XKE OPTIONS	
16MB EDO memory upgrade	add $189
5.0GB hard drive upgrade	add $399
Microsoft Windows NT 4.0 (from Windows 95)	add $99

Many other options available. Call for details.

MICRON POWER WARRANTY

- 5-year limited warranty on microprocessor and main memory
- 3-year limited parts-only system warranty (1-year for TransPort VLs)
- 1-, 3- or 5-year optional on-site service agreement for Micron desktop and server systems
- 30 days of free Micron-supplied software support for Micron desktop systems; 3 optional network operating system incident resolutions included for Micron server systems
- 30-day money back policy
- 24-hour technical support

The foregoing is subject to and qualified by Micron's standard limited warranties and terms and conditions of sale. Terms and conditions of sale may vary for specific configurations. Copies of the limited warranties may be obtained on our Web site or by calling Micron.

Call now to order. 800•245•3706 www.micronpc.com

Designed for Microsoft Windows 95

GSA Contract #GS35F4317D

Micron Sales Hours: Mon-Fri 6am-10pm, Sat 7am-5pm, Sun 10am - 5pm (MT) Technical Support Available 24 Hours A Day-7 Days A Week. Toll free from Mexico: 95-800-708-1755 • Toll free from Canada: 800-708-1758 • Toll free from Puerto Rico: 800-708-1756 • International Sales: 208-893-8970 • International Fax: 208-893-7393

©1997 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice. prices do not include shipping and handling and any applicable taxes. 30-day money-back policy does not include return freight and original shipping/handling charges, applies only to Micron brand products and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Microsoft, Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. Product names of Micron products are trademarks or registered trademarks of Micron Electronics, Inc. or NetFRAME Systems, Inc. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies.

MICRON

THINKING OUT OF THE BOX

Briefs

Road-warrior chic: PDA, pager, modem

By Kim Girard

LIKE MANY business travelers, analyst Andrew Seybold becomes a power user on the road. He totes an alphanumeric pager, a wireless electronic-mail device, Motorola, Inc.'s 3.1-ounce StarTac telephone and a Compaq Computer Corp. Armada notebook.

PORTABLE GADGETS

Part of Seybold's job as editor of the Boulder Creek, Calif.-based newsletter "Andrew Seybold's Outlook" is rummaging through hundreds of handheld devices and notebooks and picking the best.

But for many users, picking and choosing the latest and greatest from a drawer-full of gadgets and a passel of new laptops is part of the fun, whether they are status-seeking salespeople or function-demanding systems analysts.

So what's hot?

To start with, two-way pagers, wireless modems, personal digital assistants (PDA), Windows CE handheld PCs and mininotebooks.

At the top of that pack for many hip road warriors is U.S. Robotics' $400 PalmPilot Professional, a pocket-size PDA used for taking quick notes and managing telephone numbers and appointments.

PalmPilot, a familiar sight in airports everywhere, has drawn a cult of amateur and professional programming enthusiasts.

Sales of so-called smart handheld devices such as PalmPilot — as well as Windows CE palmtops, Apple Computer, Inc.'s Newton MessagePad

Road-warrior chic, page 78

Coors Brewing Co.'s Nick Sherwood and Bellverie Ross: More Coors employees are using Compaq CE handheld computers

As the digital video discs turn . . .

▸ *Users eager for DVD standard to emerge*

By Nancy Dillon

BILL WILLIAMS, MIS director at Styline Industries, said the format tug-of-war in the rewritable digital video disc (DVD) market will keep him from making a DVD storage investment in 1998. "We plan to let the dust settle and see who comes out on top," he said.

Styline, a national manufacturer of office furniture, uses recordable CDs for catalogs and sales presentations for its dispersed sales force. "Our entire catalog with four product lines is almost 2G bytes, so we can't fit it all on one 650M-byte CD," he said. "DVDs can store a lot more, so we're interested. But it's been really confusing."

Williams said he is also concerned about replacing his sales force's CD-ROM drives with DVD-ROM drives. Today's DVD-ROM drives can't read rewritable DVDs. Drives that have this ability are expected early next year.

HOT MARKET

The major DVD manufacturers will try to dispel confusion about rewritable DVD technology at Comdex/Fall '97 this week in Las Vegas.

They have a lot at stake. International Data Corp. in Framingham, Mass., has predicted that the rewritable DVD market will reach $1.3 billion in 2001. And analysts say DVD has a shot at becoming the standard technology for removable storage.

Rewritable DVD manufacturers generally fall into two format camps: DVD-RAM and DVD-RW.

DVD-RAM discs can hold 2.6G bytes on one-sided discs and 5.2G bytes on double-sided discs. Supporters of the DVD-RAM format include Hitachi America Ltd. in Brisbane, Calif.; Toshiba America Information Systems, Inc. in Irvine, Calif.; and Secaucus, N.J.-based Panasonic Communications & Systems Co.

DVD-RW discs can hold 3G bytes per side. Manufacturers in this camp include Hewlett-Packard Co. in Palo Alto, Calif.; Philips Electronics N.V. in the Netherlands; and the San Jose, Calif.-based

DVD, page 81

NT SERVER

Newspaper flips switch on mini

By April Jacobs

FOSTER'S DAILY DEMOCRAT is swapping its PDP-11/84-based publishing system for one that runs on Windows NT Server. And the newspaper is finding that it can get news on the street and on the World Wide Web faster.

The Dover, N.H., paper hasn't unplugged its Digital Equipment Corp. minicomputer yet. But it has switched its daily news operation to a new publishing system that lets designers create page layouts electronically.

Newspaper, page 80

With the old system, "it would have been next to impossible to process the files that go online daily"

– Phil Kincaid, webmaster

Road-warrior chic includes PDAs, pagers, modems

CONTINUED FROM PAGE 77

2000 and other devices — are expected to jump about 77% this year to 5.5 million units, according to International Data Corp. in Framingham, Mass.

Despite their heftier price tags — $500 to $700 for a handheld that runs a "lite" version of Windows 95 — Windows CE devices are also making their way into corporations.

Hewlett-Packard Co. last week rolled out the 360LX. It has 8M bytes of memory, 10M bytes of ROM and costs $699.

Other vendors include Philips Electronics N.V. and Casio Corp.

Nick Sherwood, information technology business analyst at Coors Brewing Co. in Golden, Colo., said company employees use Compaq's CE 1.0 handheld for scheduling, electronic mail, word processing and spreadsheets. So far, the company has 20 of the devices.

"I see people moving more and more to them," said Sherwood, who carries a handheld, cellular phone, beeper and alphanumeric pager when out of the office. "They don't want to drag a Day-Timer around."

Sherwood said he is also interested in Toshiba America Information Systems, Inc.'s Libretto, a 2.5-pound mininotebook that was just upgraded with a 120-MHz processor and two-hour battery.

Oswaldo Guzzman, a systems analyst at JC Penney Co., is waiting for the new Libretto 70 CT.

"I like it for its 2.5-pound portability and full Windows 95 [capabilities] and Microsoft Office," he said.

Franklin Electronic Publisher's Rex – a 1.4-ounce credit-card-size personal digital assistant – "is beautiful because it's so small and it contains all this information." – Wayne Gushard, Sloan & Co.

Burlington, N.J.-based Franklin Electronic Publisher's Rex, a 1.4-ounce, credit-card-size PDA, is flying off shelves.

It uses synchronization software to store phone numbers, names and a calendar downloaded from a user's computer.

The only drawback is that you can't enter information manually.

"I think it's pretty clever," said Wayne Gushard, a systems manager at Sloan & Co., a building company in West Caldwell, N.J.

"It's especially good for our president, who uses Lotus Organizer and travels a lot. The Rex is beautiful because it's so small and it contains all this information," Gushard said.

Other hot stuff for the road warrior includes the following:

- New 8-pound meganotebooks such as the IBM ThinkPad 770, which features a 233-MHz Pentium processor, a 14.1-in. color display and an optional DVD-ROM drive.
- A new crop of Windows CE 2.0 devices. Users should expect the 2-pound devices to cost about $1,000 and boast full-color 10.4-in. screens, flash memory, built-in modems and battery life of 10 to 25 hours, according to analysts. The machines will be based on RISC chips that will run at 200 MHz. ☐

ATTEND COMNET'S 20TH ANNIVERSARY EVENT

Be A Part of History — And The Future

Broadband. Wireless. Internet, Intranets, Extranets. Push and pull technologies. There's unparalleled opportunity in the communications and networking technologies now gaining in sophistication. And momentum.

ComNet's 20th Anniversary Conference and Exhibition — *The Enterprise Network: Front and Center* — gives you the unparalleled opportunity. Whether you're a builder, buyer, planner, or manager of an enterprise network.

Immerse yourself in 9 information-packed conference tracks. Listen to a distinguished cadre of speakers including 3Com's Chairman & CEO, **Eric Benhamou**, Marimba Inc.'s President & CEO, **Kim Polese** and Bell Atlantic's Vice Chairman, President & COO, **Ivan Seidenberg**. Join **Vinton Cerf**, the father of the Internet, and ethernet inventor and Internet contrarian **Bob Metcalfe** as they square off in a lively discussion, moderated by **Stewart Alsop**, about the Internet's future and what that future will mean to you. And accompany 50,000 of your colleagues to view over 500 exhibiting companies at the #1 show for new product launches.

- **#1 Show For New Product Introductions**
- **9 Targeted Conference Tracks**
  Network Management and Design • Switching Tools/Technologies/Strategies • Collaborative Networking • The New WAN • Enterprise Intranets • Network Reliability/Performance • Remote Network Access and Security • Global Telecomm: Issues and Answers • Open Forum
- **Intranet Village** *(co-sponsored by Network World and Vertical Networks)*
  A gathering of companies with products to help you design, build and manage your Intranet.

For general event information visit our Web site at www.comnetexpo.com or call 800-545-EXPO.

Owned & Produced by: IDG WORLD EXPO — Managed by: IDG COMPANY

Media Sponsors:

20th Anniversary Sponsors: IBM, ascom Timeplex

Sponsor: The George Washington University

Please send me more information about ComNet's 20th Anniversary Conference and Exhibition.

☐ Attending ☐ Exhibiting CPP

Name _____

Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone _____

Fax _____

email _____

Fax to: 781-440-0357 Or Mail to: ComNet '98, 1400 Providence Highway, P.O. Box 9127, Norwood, MA 02062

THIS IS NOT A REGISTRATION FORM.

Delivery Man.

"I'll never forget the day the CIO came into my office and told me we needed a better storage solution. One that would let us access and secure information from any department, anywhere in the organization. It had to be fast, reliable and work with our UNIX,® NT® and NetWare® platforms. I crossed my fingers and said I'd do it. Then I called StorageTek.® And today I delivered on that promise — on time and on budget." Call StorageTek at 1 800 786-7835. Or visit us on the Web. After all, when you've got the experts on your side, establishing a long-term storage solution isn't a question of luck, just a matter of deliv

Newspaper flips the switch on Digital system

CONTINUED FROM PAGE 77

Previously, staffers had to output strips of text and paste them onto dummy pages, which were transferred to the printing presses.

The new system required that Foster's buy new desktops and servers.

But in return, the switch has simplified the production process and reduced support issues, said Bob Sullivan, manager of information systems at Foster's.

Sullivan said he and his team of three support staff can troubleshoot seven Microsoft Corp. Windows NT Servers and about 45 desktops running Windows NT Workstation.

By contrast, the Digital PDP 11/84 system sometimes required a service technician to come on-site to fix a problem.

Sullivan supports about 150 users, some of whom are still working on the PDP-11/84-based system until the transition to NT Servers is complete, he said.

ALMOST THERE

The project, which took about six months from start to implementation for the news department, will likely take another several months.

With the new system, Foster's IS staff can troubleshoot seven new Windows NT Servers and about 45 desktops that run Windows NT Workstation. The Digital system often required repairs from an outside service technician.

Foster's is still searching for software that can handle the ordering and placement of classified advertising and meets the company's requirements.

Technology wasn't the only hurdle; editorial staffers accustomed to certain text interfaces had to learn a whole new one.

Sullivan said he and other support staffers conducted training sessions for each group of editorial people — writers, copy editors and editors — to make sure that each understood how the new desktop systems worked.

The old system was left up and running in case any glitches occurred to ensure that the day's paper went to print on time, he said.

The new system uses layout software from Quark, Inc. in Denver to create pages electronically. News stories are created in Microsoft Corp.'s Word.

That allows them to be HTML-enabled, said Phil Kincaid, Foster's resident webmaster.

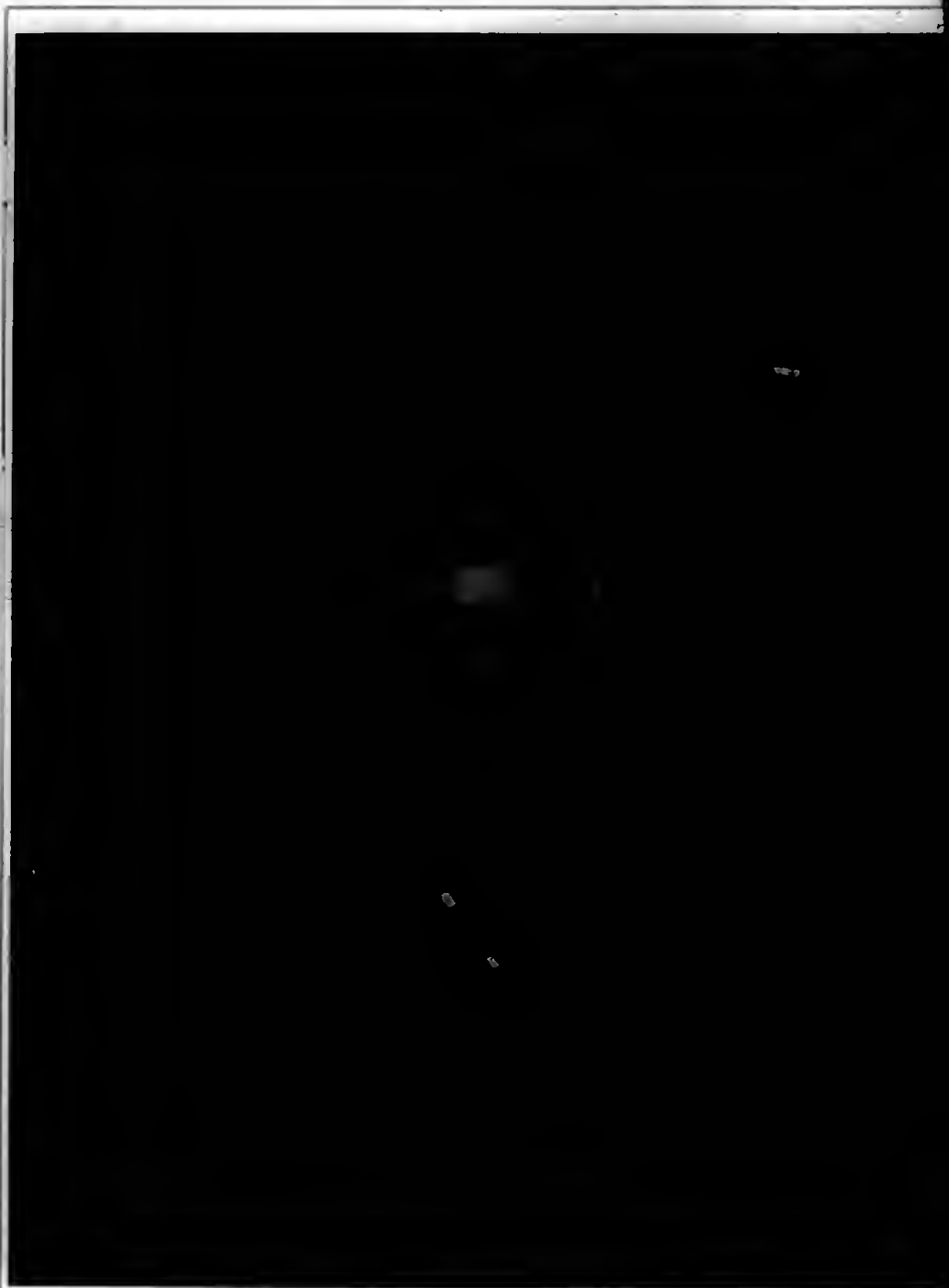
Under the old system, Web editors had to "jump through a thousand hoops to get the file formats to be correct," Kincaid said.

"Under [that] system, it would have been next to impossible to process the hundred or more files that go online daily," Kincaid said.

The paper produces three online editions daily.

The new system also helped Nov. 3 with local and regional election coverage, he said.

The newspaper staff worked with a local radio station to post election results for most of the paper's coverage area in southern New Hampshire by 9:30 that night — before any print editions were able to give readers results. □



Users waiting for DVD standard to emerge

CONTINUED FROM PAGE 77

division of Sony Corp.

The formats will record differently, so users planning to read rewritable discs in future DVD-ROM drives will have to check for compatibility.

The Hitachi and Panasonic products are due first — within the next two months. The U.S. announcement of Toshiba's entry will be at Comdex. Toshiba's drives will ship early next year.

Sony will give the first public demonstration of its DVD-RW drive at Comdex. HP and Philips also are expected to give demonstrations. DVD-RW drives are expected late next year.

"We don't expect a resolution between the two formats until 1999," said Mary Bourdon, an analyst at Dataquest in San Jose, Calif. "But the companies first to market may have an advantage if their drives work," she said.

"I would not predict DVD to be the chicken in every pot for business users," Bourdon said. "But once the street price goes under $500, it will be an appealing storage device for PCs." Pricing for the already-announced DVD-RAM drives will start at about $750.

International Data Corp. says the rewritable disc market – which includes drives such as the one above – will reach $1.3 billion by 2001

Connie Cummings, president of Priority Payroll Services, Inc. in Fort Collins, Colo., uses a 5G-byte desktop tape drive to back up individual payrolls for more than 200 client companies. "You bet we are interested in DVD storage," Cummings said. "If DVD becomes a standard like CDs are today, I wouldn't have to carry my portable tape drive to client sites to give them their accounting information." The IRS also requires that Cummings keep payroll processing records for four years. "I'm interested in the durability and compact size of DVDs," she said.□

Get a grip.

Is PC network technology driving you crazy? You need a systematic approach to managing information technology assets. In other words, you need a plan.

Which is where we come in. We've spent the last few years tracking, compiling, examining, indexing, cross-referencing and quantifying best practices in asset management.

And it's all detailed in the ASSET MANAGEMENT INDEX™, a report that explains how to reduce technology costs, improve end-user productivity and competitive standing, and raise the overall return on your high-tech investments by up to 13%.

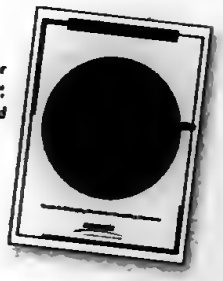
So call 1-800-272-9792 for your free copy today.

No strings. No surprises. Nothing to lose. Just a little advice on how you can control technology. Before it controls you.

COMDISCO

A TECHNOLOGY SERVICES COMPANY

Visit www.comdisco.com/am or call 1-800-272-9792 for your free copy of the ASSET MANAGEMENT INDEX™, a study of the most effective trends in managing distributed computing resources.



ASSET MANAGEMENT • BUSINESS CONTINUITY • NETWORK SERVICES • LEASING

NEW PRODUCTS

INFOIMAGING TECHNOLOGIES, INC. has announced the 3D FaxPal Plus, a hardware device that sits on a telephone line and stores incoming faxes when the receiving PC is turned off. According to the Pleasanton, Calif., company, the fax peripheral operates as a personal fax server that can store up to 20 pages. It costs $169.
Infoimaging Technologies
(510) 485-4000
www.infoimaging.com

INTERLOGIC INDUSTRIES in Melville, N.Y., has announced the PMXVX, a 300-MHz Pentium motherboard with a maximum of 384M bytes of dynamic RAM.

According to the company, the single-board computer includes a Peripheral Component Interconnect bus, an integrated drive electronics hard-drive interface and a video chip with 2M bytes of memory.

It costs $500 for a single board.
Interlogic Industries
(516) 420-8111
www.infoview.com

Red Brick

in Retail.

Data Warehousing

Special Section: Data Mining • Decision Support • Strategies

Briefs

FINDING FAULT

Why data warehouses fail to improve corporate profits:

- Flawed design or implementation of warehousing technology
- Built without adequate understanding of business issues
- Failure to directly link the warehouse environment to business applications

Source: Meta Group, Inc., Framingham, Mass.

Consolidation wave breaks right for users

By Craig Stedman

MORE AND MORE data warehousing vendors are exchanging vows at the mergers and acquisitions altar. And users who have had to shoulder the burden of stitching together different warehousing tools are only too happy to throw some rice.

Data warehousing vendors are teaming up to cover more bases than they could on their own. More than a half-dozen deals have been consummated since July on both the development and front-end analysis sides of the warehousing process (see chart, page 86).

"A lot of small companies are going to get scooped up."
– Paul Fluckiger, Carleton

The couplings should help make data warehouse construction less of an ordeal if vendors follow through on their promises to create ready-to-use bundles of packaged software, said several information systems managers who have slogged through warehousing projects.

"Building a data warehouse today is kind of like building your own Swiss watch," said Gene Alvarez, warehousing administrator at 9West Group, Inc. in White Plains, N.Y. "When you look at all the software products you need, it's hard getting all that to work together in a powerful way."

9West, an international wholesaler and retailer of women's shoes, spent about 18 months developing a pilot data warehouse based on Red Brick Systems, Inc.'s decision-support database. The warehouse, at 27G bytes and growing, went into use late last year and will eventually store wholesale merchandising information on all of the company's 13 shoe brands.

Alvarez said he started with a list of 65 warehousing vendors sorted into various tool categories. At the back end, 9West eventually decided that writing custom Cobol programs would be easier and less costly than piecing together a mix of data extraction, transformation and cleansing tools, he said.

The custom-code route continues to be popular among users. A recent survey of 2,100 data warehousing sites by Meta Group, Inc., a consulting firm in Stamford, Conn., showed

Consolidation, page 86

Jon Jacobson

COMMENTARY

Elusive productivity

SHAKU ATRE

EVEN IF computers replaced all office workers, some critics would still tell us they hadn't boosted white-collar productivity. Like the paperless office, white-collar productivity never arrives, and nobody can explain where it goes.

Yet we're told that computers have increased productivity on the shop floor and in factories. And for more than 40 years, mainframe applications for billing, accounting and financial systems have turned office work into efficient, profitable, factory-like operations. But not all white-collar workers perform routine tasks that can be evaluated by efficiency experts armed with a stopwatch and clipboard. Some make decisions or support others who do. How do you measure their productivity? By how many decisions they make or support or by how fast they do it?

Those are the people who use data warehousing. If you can't measure their productivity, it's hard to claim that data warehousing will improve it. And that can make data warehousing a tough sell. Senior management may demand guaranteed productivity boosts — that is, a return on investment (ROI). But a data warehouse aims at qualitative improvements that ultimately will impact the bottom line but can

More, page 86

Health-care project results in timely financial reports

By Linda Wilson

IN THE OLD world at Allegiance Healthcare Corp., harried managers, embroiled in competitive battles in a cost-conscious marketplace, were stuck with limited and inflexible financial information available in paper-based, end-of-month reports.

DECISION SUPPORT

In the new world, with sophisticated software and a data warehouse, flexible information is updated daily and is available electronically with a few clicks of a mouse.

Getting there wasn't easy. The company, in Waukegan, Ill., first replaced outdated mainframe operations systems with the notoriously complex SAP R/3, a client/server-based suite of business applications from SAP AG in Walldorf, Germany. Then it built a separate decision-support warehouse and integrated it with R/3.

The payoff? The ability to keep close tabs on sales, returns and other key performance indicators, which is an important way to control costs and thus increase earnings.

"It starts from payer and insurance companies, who want to reduce the cost of health care, resulting in pricing pressures on hospitals, who cut their supply budgets," explained Bert Bierschenk, health care

Project, page 86

Data Warehousing

Special Section: Data Mining • Decision Support • Strategies

Briefs

FINDING FAULT

Why data warehouses fail to improve corporate profits:

- Flawed design or implementation of warehousing technology
- Built without adequate understanding of business issues
- Failure to directly link the warehouse environment to business applications

Source: Hurwitz Group, Inc., Framingham, Mass.

Warehouse monitor

Teleran Technologies LP in Roseland, N.J., has released Java-based data warehouse management software that can be used to analyze database, end-user and query activities for signs of impending performance problems.

The Teleran System software includes artificial intelligence technology that analyzes usage patterns and can cut off resource-hogging queries before they bog down warehouse performance, company officials said. It runs on Unix and Windows NT servers. Prices start at $32,000.

Tools upgrade

Informatica Corp. and DecisionHouse Inc. both announced data warehousing tools.

Informatica in Menlo Park, Calif., previewed new software for centrally managing networks of data marts. The $225,000 PowerCenter product is due to ship early next year along with an upgrade of Informatica's PowerMart development tool, company officials said.

DecisionHouse in San Jose, Calif., detailed an upgrade of its Discovery data extraction software with added database support and new systems management features. Discovery 2.0 costs $35,000 and upgrade also is due to ship early next year.

Consolidation wave breaks right for users

By Craig Stedman

MORE AND MORE data warehousing vendors are exchanging vows at the mergers and acquisitions altar. And users who have had to shoulder the burden of stitching together different warehousing tools are only too happy to throw some rice.

Data warehousing vendors are teaming up to cover more bases than they could on their own. More than a half-dozen deals have been consummated since July on both the development and front-end analysis sides of the warehousing process (see chart, page 86).

"A lot of small companies are going to get scooped up."
– Paul Fluckiger, Carleton

The couplings should help make data warehouse construction less of an ordeal if vendors follow through on their promises to create ready-to-use bundles of packaged software, said several information systems managers who have slogged through warehousing projects.

"Building a data warehouse today is kind of like building your own Swiss watch," said Gene Alvarez, warehousing administrator at 9West Group, Inc. in White Plains, N.Y. "When you look at all the software products you need, it's hard getting all that to work together in a powerful way."

9West, an international wholesaler and retailer of women's shoes, spent about 18 months developing a pilot data warehouse based on Red Brick Systems, Inc.'s decision-support database. The warehouse, at 27G bytes and growing, went into use late last year and will eventually store wholesale merchandising information on all of the company's 13 shoe brands.

Alvarez said he started with a list of 65 warehousing vendors sorted into various tool categories. At the back end, 9West eventually decided that writing custom Cobol programs would be easier and less costly than piecing together a mix of data extraction, transformation and cleansing tools, he said.

The custom-code route continues to be popular among users. A recent survey of 2,109 data warehousing sites by Meta Group, Inc., a consulting firm in Stamford, Conn., showed

Consolidation, page 86

COMMENTARY

Elusive productivity

SHAKU ATRE

EVEN IF computers replaced all office workers, some critics would still tell us they hadn't boosted white-collar productivity. Like the paperless office, white-collar productivity never arrives, and nobody can explain where it goes.

Yet we're told that computers have increased productivity on the shop floor and in factories. And for more than 40 years, mainframe applications for billing, accounting and financial systems have turned office work into efficient, profitable, factory-like operations. But not all white-collar workers perform routine tasks that can be evaluated by efficiency experts armed with a stopwatch and clipboard. Some make decisions or support others who do. How do you measure their productivity? By how many decisions they make or support or by how fast they do it?

Those are the people who use data warehousing. If you can't measure their productivity, it's hard to claim that data warehousing will improve it. And that can make data warehousing a tough sell. Senior management may demand guaranteed productivity boosts — that is, a return on investment (ROI). But a data warehouse aims at qualitative improvements that ultimately will impact the bottom line but can

Atre, page 86

Health-care project results in timely financial reports

By Linda Wilson

DECISION SUPPORT

IN THE OLD world at Allegiance Healthcare Corp., harried managers, embroiled in competitive battles in a cost-conscious marketplace, were stuck with limited and inflexible financial information available in paper-based, end-of-month reports. In the new world, with sophisticated software and a data warehouse, flexible information is updated daily and is available electronically with a few clicks of a mouse.

Getting there wasn't easy. The company, in Waukegan, Ill., first replaced outdated mainframe operations systems with the notoriously complex SAP R/3, a client/server-based suite of business applications from SAP AG in Walldorf, Germany. Then it built a separate decision-support warehouse and integrated it with R/3.

The payoff? The ability to keep close tabs on sales, returns and other key performance indicators, which is an important way to control costs and thus increase earnings.

"It starts from payer and insurance companies, who want to reduce the cost of health care, resulting in pricing pressures on hospitals, who cut their supply budgets," explained Bert Bierschenk, health care

Project, page 86

Web Enabled

FREE for a Limited Time...A CD ROM Preview of

The Top New Data Warehousing Software

When 200,000 IS managers were asked to choose the top software for data warehousing, their answer had a familiar ring:

SAS® software from SAS Institute.

DATAMATION

Datamation Product Year

As the only end-to-end solution for rapid data warehousing, SAS software delivers everything you need to manage, organize, and exploit your business data. The tools you use to build a data warehouse are the same ones used to maintain it... run it...and change it. And what's more, everything's scalable. Jump right into enterprise-wide information delivery applications...or start small and build on your success.

SAS software doesn't consume overhead for database features you don't need. And once you have data in the warehouse, you'll find everything you need for data query and reporting, OLAP/multi-dimensional analysis, data mining, database marketing, data visualization, and much more. It's never been easier to access your data...or to arrive at informed decisions by turning raw data into real information.

SAS® **SAS Institute**

Software for Successful Decision Making

Phone 919.677.8200 Fax 919.677.4444
In Canada 1.800.363.8397

You can also request your free CD ROM, and learn more about SAS seminars in your area, by visiting us on the World Wide Web at http://www.sas.com/

E-mail: cw@sas.com

SAS is a registered trademark of SAS Institute Inc. Copyright © 1996 by SAS Institute Inc.

Consolidation hits warehouse vendors

CONTINUED FROM PAGE 83

that 55% are still writing their own programs to handle at least some pieces of the back-end data preparation process.

The persistence of the do-it-yourself approach makes things hard for some warehousing tool vendors, said John Ladley, a Meta Group analyst. "The No. 1 competitor for all of the packaged products is Cobol, and business just isn't growing fast enough for all of the companies," he said.

Another factor pushing vendors into one another's arms is the spread of data warehousing to a wider base of corporate users who view its business analysis and decision-support capabilities as crucial competitive weapons, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston.

BIG IS BEAUTIFUL

"As the market gets bigger, the customers are getting more conservative," Eckerson said. "Mainstream companies don't want to buy tools from small vendors and then have to integrate them. There's a shakeout going down because [vendors] realize you need deep pockets now."

The need to bulk up financially was cited in several recent deals, such as Minneapolis-based Apertus Technologies, Inc.'s acquisition of Carleton Corp. in Billerica, Mass.

Carleton initially tried to expand beyond its mainframe and AS/400 data extraction roots by signing deals to integrate and resell other tools with its software. But the company quickly learned it needed to get bigger fast, said Paul Fluckiger, Carleton's president.

"The strategy we had was pretty ambitious, but the market is moving too quickly," he said. "A lot of small companies are going to get scooped up."

Ladley said all the deal making could cause short-term confusion for users while merging vendors sort out their organizational differences. And the promised integration of products won't happen overnight, he added. For example, it is expected to take Apertus and Carleton up to 18 months to give their tools a common user interface and meta data layer.

Jack Nealon, data warehouse manager at the U.S. Department of Agriculture's (USDA) national statistics service in Washington, can attest to the difficulties vendors sometimes have swallowing acquisitions.

When Nealon began evaluating warehousing technology, he had trouble getting answers to technical questions from one vendor that had just bought a specialized decision-support database. "It looked like we were dealing with a company where no one knew anything about the product," he said.

But the promise of vertical integration sounds good, Nealon said. For example, Red Brick's recent purchase of data warehouse generation technology may simplify the USDA's warehouse expansion, he added.

Ray Pyle, chief information officer at the Blue Cross/Blue Shield Association's federal government health plan in Washington, agreed that the consolidation trend should help users.

"I've thought this was necessary for a long time," Pyle said. "People are really looking for complete packages, not just a piece of technology that needs to be integrated with other products."

Pyle's unit, which handles $7 billion worth of health insurance premiums per year, wrote its own Cobol code to extract, cleanse and load data for warehousing. The warehouse holds about 30G bytes now and is scheduled to grow to nearly 2T bytes by late next year. □

BUYING TIME

Recent acquisitions in the data warehousing market include:

July
- Prism Solutions buys data quality software vendor ODB Solutions

September
- Red Brick buys warehouse development and analysis tools from Engage Technologies
- Actuate Software acquires NetScheme Solutions, a maker of Internet-based reporting software
- Cognos signs a deal to buy Interweave Software, a maker of query tools for Web users

October
- VMark Software, a maker of data warehouse development tools, signs a deal to merge with database vendor Unidata
- Query tool vendor Andyne Computing agrees to be acquired by Hummingbird Communications
- Apertus Technologies purchases Carleton, combining two makers of data warehouse development tools

Project leads to timely reports

CONTINUED FROM PAGE 83

group vice president at Duff & Phelps Credit Rating Co. in Chicago. Cost and payback figures weren't available from Allegiance.

Allegiance, spun off by Baxter International, Inc. last year, operates three health care businesses: supply distribution, surgical- and respiratory-therapy supply manufacturing, and materials-management consulting.

Allegiance purchased the financial, sales, distribution and production-planning modules of R/3 as part of a corporate reengineering effort begun in 1994. It opted for a separate decision-support warehouse because it concluded that R/3's database design was best suited to operations and not reporting functions. Operational databases are generally structured to support quick data entry, whereas decision-support databases are structured to support quick data retrieval. "They are fundamentally different data models," said Mark Ciekutis, data warehouse manager at Allegiance.

The decision to build a separate warehouse didn't come without costs. A crucial and very difficult part of the project involved devising a way to transfer data nightly from R/3 to the warehouse.

That was because of R/3's complexity and use of a proprietary programming language, ABAP. The application programming interfaces in the 3.0D version haven't made the task easier because they are geared toward transaction environments and not decision-support warehouses.

"There are thousands of tables that are tightly integrated. To get the data out of SAP R/3 and move it to the warehouse, we had to figure out what tables get updated and why they get updated" when new information is entered, Ciekutis said.

Allegiance also evaluated ETI-Extract from Evolutionary Technologies International, Inc. (ETI) because Allegiance had already purchased the conversion tool to link R/3 to operations systems on older platforms. "We found that the tools, which are supposed to help with the extraction process, were hard to get to know," Ciekutis said.

So the group decided to write its own programs in ABAP. It took about four months to write and test them. The warehouse resides on a Digital Equipment Corp. Alpha 8400 server that runs Oracle Corp.'s Oracle 7.3 relational database management system. Users access data from the warehouse using BusinessObjects from Business Objects, Inc. in San Jose, Calif.

Allegiance began the warehouse project in October 1996 and brought up all financial tables and 500 users this year. The distribution and production-planning tables and 60 distribution centers will be added by the end of next year, bringing the total number of warehouse users to 3,000.

The warehouse has already allowed the finance staff to restructure the report process, said Mary Pat Raleigh, financial integration manager. Using BusinessObjects, the staff built template-type standard reports that users can customize. The template for profit/loss, for example, lets a user look at monthly, quarterly or annual figures.

"With good reports, you know where your business is heading," Raleigh said. □

Wilson is a freelance writer in Glen Ellyn, Ill.

Atre

CONTINUED FROM PAGE 83

be difficult to predict. You need business justification that goes beyond ROI.

That justification could be regaining control. Computers have enabled companies to grow larger than ever before. But the resulting monoliths are often virtually unmanageable. And even smaller companies have become ensnared in complexity and bureaucracy.

Data warehousing is about strengthening control by improving the quality of decision support. It extracts actionable information from reorganized versions of the operational data a company already collects, perhaps augmenting it with external data sources that help illuminate the internal data. Data warehousing is often a diagnostic tool for spotting trends and reading between the lines.

Here's how to justify it:

Start at the beginning. Identify your firm's corporate goals and objectives, then formulate the business analysis issues that will promote those goals.

Next, define the information requirements for each business issue and identify subject areas. Give the results to line managers, showing them the kind of business intelligence questions the warehouse can answer.

Get input and refine your plan. Define deliverables where possible. For example, explain that a warehouse would allow you to create a unified client profile detailing all the products a client has purchased and the client's spending record over time. Then you would be able to identify clients' buying patterns, find cross-selling opportunities, figure out which customers are most profitable and identify purchasing trends. Using third-party market and econometric data, you'd be able to design an array of "micromarketing" strategies.

That approach will engage the imagination of your executives. They know the business and won't need phony "guesstimates" to realize the potential value of a client profile to their management goals. If you try to justify the project on the basis of estimated ROI, you easily wind up back in the search for white-collar productivity. Which nobody has ever found. □

Atre is president of Atre Associates, Inc., a consulting firm in Port Chester, N.Y. She can be reached at shaku@atre.com.

NCR turbocharged Union Pacific's data engine.

"We wanted a data warehouse powerful enough to handle complex business questions and scalable enough to take us into the next century. The NCR Teradata® database made NCR the obvious choice."

When Union Pacific was looking to implement an enterprise-wide scalable data warehouse strategy, they asked NCR, the world leader in data warehousing, to get the project started on the right track.

Our NCR Services professionals helped Union Pacific consolidate dozens of disparate systems into a single 1.1-terabyte scalable data warehouse that captures and stores all their mission-critical transportation and logistical information.

Running our NCR Teradata database on our scalable NCR WorldMark™ servers enables unmatched, ad hoc, complex business questions. This gives Union Pacific's 2,300+ users the power to track everything from accounts payable to locomotive and car movement, resulting in millions of dollars in savings each year.

To learn more about how NCR can help you set up a scalable data warehouse that's perfect for your business needs, call 1 800 CALL-NCR, ext. 3000. Or visit us at www.ncr.com. To learn more about Union Pacific, visit www.up.com.

NCR

Transactions in the Age of the Consumer

L. Merill Bryan, Jr.,
Senior Vice President,
Information Technologies,
Union Pacific

intel inside

All WorldMark servers shown feature Intel Pentium Pro processors. The Intel Inside Logo and Pentium are registered trademarks of Intel Corporation. Teradata is a registered trademark and WorldMark is a trademark of NCR Corporation. ©1997 NCR Corporation. All rights reserved.

OUR WORKSTATION
MEMORY
COSTS UP TO
50% LESS
THAN THE SYSTEM
MANUFACTURERS.*
Good luck finding
any other differences.
GO AHEAD. SCRUTINIZE,
hairs. You'll soon find that the only thing
different about Kingston® workstation
memory is the price. That's because we use
the same premium
components as the
system manufacturers. And because we design
and test memory for more than 4,000 different
systems, we've become the expert in compatibility,
customization, and configuration. Think about
it: With
Kingston
you can
afford twice
as much memory, while maximizing your
systems' performance. Or just pocket the
dramatic savings. To find out more
about UNIX and Windows® NT
workstation memory, call Kingston
at (800) 337-7028. Or check out our
Web site at www.kingston.com/ad.
Kingston memory
is guaranteed
compatible and is
backed by a
lifetime warranty
with free technical
support.
Kingston
TECHNOLOGY
COMPUTING WITHOUT LIMITS™

Annual Skills Survey

PAYING THROUGH THE NOSE

By Miryam Williamson

Name your skill, and you're gonna pay — DEARLY — to either get it or keep it on staff. Our third annual skills survey finds nearly all IS skills now command a salary premium, some over 30%!

PETER COATES

Tim Gurbick has the kinds of skills that make recruiters salivate. But when they call him, Gurbick tells them he's not interested in moving on.

Gurbick brought knowledge of several Unix dialects, TCP/IP and Ethernet networking when he signed on as network engineer at Teachers Credit Union in South Bend, Ind., just over a year ago. He's since learned frame relay, Integrated Services Digital Network and Fast Ethernet.

39%
Salary premium paid for SAP consultants.

19%
For SAP staffers. The industry's hottest skill is a scorcher.

"Given my Unix background and my new skills, I wouldn't have much difficulty finding another job," Gurbick says. "But one cannot overestimate the value of inertia. I'm happy, well-treated and well-paid where I am." He's clear about that with recruiters who call him and listens only to opportunities within 150 miles of South Bend.

With the attributes Gurbick boasts, it's no wonder he's being heavily courted. After all, networking topped the charts in *Computerworld*'s 1997 skills survey, in which 542 mid- and senior-level information systems managers reported on skills they are planning to hire and train for in the coming year and on salary premiums currently paid to staff and contract workers with specific expertise. (Salary premiums are the amount of additional compensation paid to an employee for hav-

Paying through the nose, page 90

PAYING THROUGH THE NOSE

CONTINUED FROM PAGE 89

ing a specific skill vs. someone in a similar position without the skill.)

LAN skills are hot, but even more in demand are people proficient in designing and managing wide-area networks, says Neal Fisher, president of PPS Information Systems Staffing, a Baltimore recruiting firm. Fisher ascribes this to the continuing trend toward corporate mergers.

"With all these takeovers, you know how important it is to be linking these major corporations," Fisher says. Hiring managers seem especially interested in folks who know TCP/IP and Windows NT — client, server or both.

IS contractors with SAP implementation experience can attract salary premiums averaging 40%, and PeopleSoft, Inc. skills draw an average of 33.6% above ordinary hourly rates. Baan experience can mean 25% higher paychecks, and Oracle Corp. skills, both on the application and database sides, command a not-too-shabby 23% premium. Permanent staff members trade stability for premium pay, attracting somewhat smaller salary premium bonuses.

JEFF SCIORTINO

SEALED AND CERTIFIED

Michael Lamore, PC help supervisor at ADP Dealer Services' Portland, Ore., facility, expects to pay a premium for a Microsoft Certified Engineer. "Certification will give me the assurance that the person is fluent in Windows NT," he explains.

Lamore says he is also looking for a help desk technician who knows NT but isn't certified. "By hiring someone with exposure to NT but no certificate, I'll save considerably," he says.

People with Internet skills can find jobs anywhere, it seems. Fisher notes a steady increase in calls from employers seeking experienced webmasters fluent in Hypertext Markup Language, World Wide Web development languages and authoring tools, particularly FrontPage. Internet developers who know Java may find themselves especially welcome in Kentucky, Tennessee, Alabama and Mississippi, according to survey results.

COBOL COMPETENCY

Language competencies most often sought are C++ and — oot surprisingly — Cobol.

"People with legacy Cobol skills have experienced a bit of a rebirth because of the year 2000 problem," says Greg Scileppi, executive director at RHI Consulting in Menlo Park, Calif., a subsidiary of recruiting firm Robert Half International, Inc.

Contract Cobol programmers can look for pay premiums averaging nearly 27%. Not bad for a skill many were calling dead only a year or two ago. But for some, pay gratification may be delayed. Michael T. McCarty, senior director at Johns Hopkins Health Systems in Baltimore, says he is considering a bonus for year 2000 technicians, part to be paid at the end of 1999 and the rest a few months into the following year.

"If we artificially inflate salaries now, what happens in 2001?" McCarty asks.

The combination of Microsoft Visual Basic and Visual C++ skills is particularly compelling to software development managers. Programmers fluent in C may want to catch the next plane to one of the Mountain states, where two-thirds of survey respondents are looking for them.

The "Most Wanted" skills

The top technology skills, according to the percentage of companies expecting to train for them and hire for them next year:

RANK	INTERNET SKILLS	COMPANIES WITH SKILL NOW	COMPANIES TRAINING FOR SKILL NEXT YEAR	COMPANIES HIRING FOR SKILL NEXT YEAR
1	HTML	[illegible]	[illegible]	[illegible]
2	Java	[illegible]	[illegible]	[illegible]
3	Web server administration	[illegible]	[illegible]	[illegible]
4	Internet development tools	[illegible]	22%	[illegible]
5	Electronic commmerce	[illegible]	[illegible]	[illegible]

RANK	LANGUAGES			
1	C++	[illegible]	[illegible]	17%
2	Cobol	[illegible]	4%	[illegible]
3	C	[illegible]	[illegible]	[illegible]
4	Micro Focus Cobol	[illegible]	[illegible]	[illegible]
5	Smalltalk	[illegible]	2%	3%

RANK	DEVELOPMENT TOOLS			
1	Microsoft Visual Basic	24%	25%	[illegible]
2	Visual C++	[illegible]	[illegible]	[illegible]
3	PowerBuilder	[illegible]	[illegible]	[illegible]
4	Oracle Developer/2000	[illegible]	[illegible]	[illegible]
5	Visual J++	[illegible]	[illegible]	[illegible]

RANK	NETWORKING	[illegible]		
1	TCP/IP	70%	30%	[illegible]
2	IPX	[illegible]	7%	[illegible]
3	Wan-Wise	[illegible]	7%	[illegible]
4	SNA	22%	[illegible]	4%
5	APPC*	11%	2%	3%

RANK	DBMS AND RDBMS			
1	Oracle	22%	19%	[illegible]
2	DB2	[illegible]	[illegible]	[illegible]
3	Microsoft SQL Server	[illegible]	[illegible]	[illegible]
4	Sybase SQL Server	[illegible]	7%	[illegible]
5	Object databases	[illegible]	[illegible]	[illegible]

RANK	OPERATING SYSTEMS			
1	Windows NT	[illegible]	[illegible]	[illegible]
2	Windows 95	[illegible]	[illegible]	[illegible]
3	Unix	[illegible]	[illegible]	[illegible]
4	AIX	[illegible]	[illegible]	[illegible]
5	Windows 3.x	[illegible]	[illegible]	[illegible]

RANK	INTERNETWORKING			
1	Ethernet switching	[illegible]	[illegible]	[illegible]
2	ATM	[illegible]	[illegible]	[illegible]
3	Routing	[illegible]	[illegible]	[illegible]
4	10Base-T switching	[illegible]	[illegible]	[illegible]
5	Gigabit Ethernet	[illegible]	[illegible]	[illegible]

(Note: All percentages have been rounded off to the nearest whole number.)

Where hiring is concerned, no geographical dead spots show up on the skills survey, but activity is highest in New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Michigan and Wisconsin. Similarly, no industry leads in hiring demand, but metal, plastic and rubber manufacturing leads that industry segment, and government registers highest in the nonmanufacturing area.

Fisher says he gets the most requests from the insurance and investment industries. While the entire U.S. is doing well in terms of job opportunities, Atlanta and Houston are particularly active in hiring at the moment, he says.

TRAIN WHO YOU HAVE

Although 36.2% of respondents reported increased hiring plans, 51.3% intend to improve the skill levels of existing staff. Kevin Butterbaugh, vice president of Teachers Credit Union, plans to spend between $50,000 and $75,000 on training. "We want to be self-reliant in supporting the systems we have and not depend on third-party contractors," he says.

Butterbaugh says he also sees an in-

Paying through the nose, page 92

The right skills at the right time

Mindy Hall-Lane, systems administrator at ADP Dealer Services, found her way into her profession almost by accident.

Just out of high school in 1981, she started work in a hospital's materials management department. When a new manager came onboard and decided to automate the operation, Hall-Lane was picked to participate in choosing the hardware and developing the software package "because I was new and wasn't biased to any particular computer system or software," she says.

A subsequent job as a customer service representative brought her the opportunity to obtain Novell network certification.

At ADP Dealer Services, she learned Windows NT networking. Now, five months after joining ADP, she is coordinating the rollout of Microsoft's Systems Management Server. She is almost entirely self-taught.

"There's a lot of good information out there, self-training videos and books," Hall-Lane says.

Well-trained; well-paid; staying put

Heading a team of five, Stan Hill, LAN/WAN architect at Johns Hopkins Health Systems, takes care of the organization's Windows NT servers, including a 600-node network of public workstations that allow some 2,000 hospital workers to log on at any location.

Hill's group also handles software management and distribution. Hill says Hopkins hired him three years ago "because I knew what NT stood for and they were desperate."

Recruiters call him frequently, he says, but "here I can get all the training I want, and they pay me pretty well." It would take a hefty increase to get him to move. "Twice what I'm making might get my attention," he says. He thinks the next hot technologies will be ActiveX, data warehousing, data mining and anything related to the World Wide Web.

His advice for someone just starting out: "Learn Visual C++ and Visual Basic and you won't have to worry where your next meal is coming from."

CONTINUED FROM PREVIOUS CHART

The "Most Wanted" skills

The top technology skills, according to the percentage of companies expecting to train for them and hire for them next year:

RANK	LAN ADMINISTRATION	% COMPANIES WITH SKILL NOW	% COMPANIES TRAINING FOR SKILL NEXT YEAR	% COMPANIES HIRING FOR SKILL NEXT YEAR
1	Windows NT Server	41%	23%	15%
2	Novell NetWare	30%	16%	11%
3	Ethernet	20%	10%	8%
4	HTTP	13%	8%	3%
5	OS/2 LAN Server	9%	1%	2%

RANK	OFFICE/E-MAIL/GROUPWARE			
1	Microsoft Exchange	27%	26%	10%
2	Lotus Notes	13%	9%	7%
3	Novell GroupWise	14%	7%	4%
4	CC:Mail	10%	3%	4%

RANK	CLIENT/SERVER APPLICATIONS			
1	Oracle	12%	8%	11%
2	SAP	4%	3%	5%
3	PeopleSoft	3%	3%	5%
4	J. D. Edwards	3%	2%	3%
5	Baan	2%	2%	3%

RANK	SYSTEM SOFTWARE & SUPPORT			
1	Year 2000 conversion	37%	16%	10%
2	Help desk	29%	15%	10%
3	Data warehousing/mining	19%	13%	9%
4	Network management	19%	10%	7%
5	Project management	18%	13%	8%

(Note: All percentages have been rounded off to the nearest whole number.) Base: 542 IS managers

Finders, keepers

Hiring managers say the following are the most effective methods of finding the IS talent and skills they need:

RANK	RECRUITING METHOD	% RESPONDING
1	Newspaper/magazine ads	48%
2	Placement/recruiting firms/headhunters	40%
3	Internet ads	14%
4	Referrals from peers/friends/industry contacts	13%
5	Networking	9%
6	School/college recruiting	7%
7	Word of mouth	7%
8	Referrals from current employees	7%
9	Train in-house or promote from within	6%
10	Contractors	6%

(Note: All percentages have been rounded off to the nearest whole number.) Base: 542 IS managers

Hiring is Hell

Hiring managers say the hardest skills to find in the past 12 months were:

RANK	TECHNOLOGY SKILL SET	% RESPONDING
1	Oracle (database)	14%
2	Cobol	10%
3	Unix	9%
4	Networking	9%
5	Windows NT Server	8%
6	Database/relational database skills	7%
7	Windows NT	6%
8	AS/400	6%
9	Other specific networking skills	6%
10	Other mainframe-/minirange-related skills	6%

(Note: All percentages have been rounded off to the nearest whole number.) Base: 542 IS managers

PAYING

THROUGH THE NOSE

CONTINUED FROM PAGE 91

vestment in training as a way to keep employees from straying. He says it's one way to show technical professionals they are valued.

To retain skilled people, McCarty persuaded senior management to restructure pay scales, leaving behind the traditionally lower rates that hospitals pay and adopting rates that reflect the IS industry as a whole.

Whether a technical professional prefers to work with applications or networks, flexibility is key to success in today's job market, Fisher says.

MICROSOFT IS HOT

McCarty notes that although Windows NT gets all the attention, the really hot employees are those equipped to work with the newest technologies, and those he lists all come from Microsoft — Windows NT, software management, Zero Administration Kit LANs, "anything that helps companies drive down the total cost of ownership."

Asked to name today's least valuable skill, McCarty replies, "Novell knowledge. In our environment, the number of NT LANs is growing 10% to 15% a year, and the number of Novell LANs is being reduced by 5% or 10% a year."

Oracle experience is the top database product on his clients' shopping list, drawing salaries of $50,000 to $100,000, depending on experience, Fisher says.

But conventional software developers are apt to find pickings growing slimmer as packaged software crowds out proprietary applications.

One exception: Developers familiar with object orientation are starting at $30,000; those with three or four years' experience are earning double that and more.

As outsourcing continues to grow, independent contractors are seeing pay offers from $60 to $200 per hour, Scileppi says. But the contractor role isn't for everyone.

"You've got to have the personality for it, to be able to meld into an organization and get up to speed quickly," Scileppi says. "The demands are higher, but the reward from a financial and career satisfaction standpoint is higher, too." □

Williamson is a freelance writer in Warwick, Mass.

BIG cash for consultants and contractors

The top skills for consultants and contractors, in terms of the additional "premium" paid for the skill above normal salary:

RANK	TECHNOLOGY SKILL SET	SALARY PREMIUM PAID FOR SKILL
1	SAP	39%
2	Object databases	38%
3	Lawson	37%
4	PeopleSoft	34%
5	Year 2000 project management	27%
6	Baan	25%
7	Java	25%
8	Novell NetWare	24%
9	Oracle (client/server application)	23%
10	Oracle (database)	23%
11	Web server administration	22%
12	ATM	21%
13	Progress	21%
14	J. D. Edwards	21%
15	Borland Delphi	20%
16	Gupta SQLBase	20%
17	Windows NT Server	20%
18	Ethernet	20%
19	Oracle Developer 2000	20%
20	dBase/Xbase	19%
21	Sybase SQL Server	19%
22	AIX	19%
23	Wan-Wise	19%
24	Microsoft SQL Server	18%
25	Electronic commerce	18%

(Note: All percentages have been rounded off to the nearest whole number.) Base: 542 IS managers

Skills to BANK a career on

The top skills for permanent IS employees, in terms of the additional "premium" paid for the skill above normal salary:

RANK	TECHNOLOGY SKILL SET	SALARY PREMIUM PAID FOR SKILL
1	SAP	19%
2	Lotus Notes	13%
3	Baan	12%
4	PeopleSoft	12%
5	Progress	12%
6	PowerBuilder	12%
7	Smalltalk	11%
8	Visual J++	11%
9	Paradox	11%
10	Netscape Server	11%
11	ActiveX	10%
12	Gupta SQLWindows	10%
13	HTTP	9%
14	AppleTalk	9%
15	Novell GroupWise	9%
16	Data warehousing/mining	9%
17	Windows NT Server	9%
18	Microsoft SQL Server	8%
19	Oracle (database)	8%
20	Apple Macintosh	8%
21	CGI	8%
22	Systems management	8%
23	Oracle Developer 2000	8%
24	Borland Delphi	8%
25	Novell NetWare	8%

(Note: All percentages have been rounded off to the nearest whole number.) Base: 542 IS managers

Time for a change
Take the word "information" out of IT, Peter Keen argues. Page 104

Managing

ONE MANAGER'S LOOK AT TCO

By Brian D. Jaffe

Forget those total cost of ownership numbers, says an IS manager in the desktop trenches. A common-sense attitude, tempered with skepticism, is what it takes to cut desktop costs. Here are 25 ways to save some bucks.

I'm always eager to reduce the total cost of ownership of desktop computing.

As an information technology director responsible for PCs and LANs in a 1,000-user environment, it's an important issue for me. But watching everyone try to outdo one another with claims of lower total cost of ownership (TCO) is like watching politicians make campaign promises about tax cuts. Talk is cheap, but what about delivering the goods? All the TCO gurus seem to agree that an average shop can reduce total cost of ownership about 15% by implementing various best practices. So my editor asked me to look at some of the best practices being touted. I did, and I've got to tell you, while some seemed to have obvious benefits, others made me wonder if I was being sold the "trickle-down theory" of economics.

Here are the top eight best practices, and my rating (see box above right) on how much of an impact they can have on reducing TCO:

❶ Define and enforce hardware, software and configuration standards.

The fewer the number technology platforms in an environment, the easier support should be. Likewise for any hardware and software setups.

TCO, page 96

Ratings

★★★★	When you're getting serious about reducing TCO, start here.
★★★	Very worthwhile way of reducing TCO.
★★	Will make more of a scratch than a dent.
★	Well, it can't hurt.

SAP R/3, TeamSAP, AcceleratedSAP and the SAP and AcceleratedSAP logos are the registered or unregistered trademarks of SAP AG. A Rose Knows Like Information is a service mark of SAP AG. ©1997 SAP America Inc. All rights reserved.

TeamSAP is a new initiative of people, processes and products representing SAP's total commitment to customer success.

AcceleratedSAP. Five quick steps to a better ROI. Get the most powerful business software in the world the fastest way possible with AcceleratedSAP™. It's a new program that allows you and your TeamSAP™ consultants to follow a proven five-step path to R/3™ implementation.

From Project Preparation through Go Live, tools and templates minimize delays and unplanned costs. Even after you're up and running, we're there to support you every step of the way. Already, companies using AcceleratedSAP have gone live in less than six months. So with the returns in on AcceleratedSAP, now it's time for you to get your better return on information. For more information, visit us at http://www.sap.com or call 1-800-283-1SAP.

ONE MANAGER'S LOOK AT TCO

CONTINUED FROM PAGE 93

I have no argument here. The less variation there is, the easier it is to support. Defining standards generally takes an up-front investment of only time, followed by regular reviews to evaluate and update.

The downside: Enforcing standards requires finesse when every user thinks he has unique requirements. And you'll never get unanimous agreement. In my shop, we still argue over desktop vs. minitower: Is it worse to bang your head on the bottom of the desk or to move someone's precious collection of windup toys to get to the CPU?

But despite the debates, standards are well worth it. You just have to remember that policies don't create standards; firm actions do. If you don't enforce the standards, they have no value.

RATING: ★★★ — Defining standards is nice and simple, but you have to stick to your guns for it to pay off.

❹ Implement desktop management technologies.

Each trip to a user's PC costs you valuable time, but there's a limit to what you can talk a user through over the telephone. Several products provide electronic software distribution, check for viruses, collect inventory data and perform other chores. There's also remote-control software to take over a user's PC for troubleshooting.

If I could do only one thing to reduce TCO, it would be this. Imagine being able to deploy software, files and updates to each desktop without leaving your chair; finding and cleaning viruses before the user knows he has one; or remotely undeleting files. Reduce visits to the users' desks, and you save incredible amounts of time and money.

But it isn't as simple as a flat tax. Besides the cost of the these packages (between $25 and $50 per PC), you also have to deploy them to each workstation and use them effectively. If you aren't fanatically meticulous in writing and testing the scripts for electronic software distribution, you can automate problem distribution as easily as problem resolution. Colleagues still remind me of the time I managed to shut down every user with my new "preventive maintenance" script.

RATING: ★★★★ — Like tax preparation software, desktop management software costs some money, and you must make the effort to use it effectively, but it can make life much easier.

❺ Limit users' abilities to get themselves in trouble.

The support needed for troubleshooting and firefighting when users download shareware or install games and applications they brought from home can be tremendous. Minimizing those risks, the gurus say, can reduce total cost of ownership. PCs without disk drives or CD-ROM drives are one way; strict rules about do-it-yourself installations are another, though they are less effective. Others put their hopes in the Windows NT operating system, which has built-in desktop controls.

I like this one's potential, but I'm hesitant about the implementation. The diskless workstation still hasn't really proved itself, and trying to control user activity through policy is generally futile. In the DOS/Windows 3.1 environment, desktops are vulnerable to users' ignorance, and Windows 95 isn't much better. In both environments, there's little to stop a user from installing his own software or changing application and operating system configuration files. To some of my users, it seems as if the most important application is their screen saver, and heaven forbid that you point to it as the source of their Windows resource problems.

I'm optimistic about NT's capabilities for letting me decide what users can (choose screen colors and wallpaper to their heart's content) and can't (edit the registry) do to their desktop. I also like the way NT lets me administer this control centrally.

But when I think of taking away user freedoms, I remember the uprising I ran into when moving from desktop printers to shared network printers. I don't expect users to easily give up loading the screen saver du jour just because I ask.

RATING: ★★ — A little bit of knowledge can be dangerous, so we need to help protect users from themselves. But watch out for flying bricks.

❻ Maintain an inventory of all PC hardware and software.

If you already know what hardware and software a user has, the theory goes, then you won't have to spend time figuring it out when the user calls.

That's true, but do you really spend that much time on it to begin with? And I have yet to find a procedure or technique that will assure that members of the PC support team update the inventory when they upgrade a user from a 15-in. monitor to a 17-in. screen. There are several automated inventory tools, and combined with desktop management software, they're a good resource to have. But by itself, an inventory is lower on my to-do list.

RATING: ★ — I'll use the inventory if I have it because it helps answer unexpected questions about our PCs and printers from the chief information officer. But if it's done in isolation, I'm not sure of the overall value.

❼ Minimize hardware and software upgrades.

As soon as the deployment of one upgrade wraps up, plans already are starting for the next. You have to wonder if the benefits outweigh the costs. Anybody who can stop this merry-go-round deserves a nomination for the Nobel Prize in economics.

Hardware upgrades swallow resources like quicksand. It's generally much cheaper to buy that extra 8M bytes of RAM or a larger hard drive when buying the PC vs. upgrading later. Adding memory sounds easy, but it includes determining what part is compatible with the then-discontinued PC, then ordering it, installing it and hoping it works.

Similarly, you have to weigh an upgrade's value against the cost of deploying it. Your information systems resources are too limited to waste on delivering "enhancements" that few users, if any, need or notice.

Two downsides here: the additional capital outlay for hardware, and justifying to users why a particular software upgrade didn't warrant your attention.

RATING: ★★★

❽ Remember, knowledge is good.

The more you, your staff and your users know, the better off everyone is.

If your support staff thinks a "pivot table" is a monitor's tilt-swivel base instead of an advanced feature of Excel, or a user thinks the CD tray is a cup holder, you have a problem.

Solutions include training users and staff, product support contracted with vendors or third parties and access to knowledge bases, such as World Wide Web sites or CD-ROMs that contain information on products and technologies.

Training comes in many forms: classroom, computer-based, videos and more. But I think en-

vironment training is often neglected. A few hours to familiarize new employees with your environment's idiosyncrasies (shared directories, ID/password policies, electronic mail, support channels, procedures, and so forth) brings them up to speed quickly and reduces support calls.

Unfortunately, training dollars make easy targets when budgets are scrutinized. But I'd cut back on training before giving up support arrangements for technologies that span the enterprise (network operating systems, network hardware and the like).

RATING: ★★★★ — The more information sources, the better.

❼ Management buy-in.

Because total cost of ownership issues affect the whole company, you should have support outside IS, and high up to increase the chances of success for your TCO reduction efforts.

Executive support is always nice if you can get it. But I don't know if I'd consider requiring it before embarking on TCO reduction efforts. More than once in my career I've brought things in without fanfare or on a shoestring budget because management didn't want to hear about it.

I think it's important that upper management be fully informed about TCO issues and efforts, but if experience is any indicator, once the talk turns to technology, their eyes glaze over.

In fairness, I get the same look when the bean counters start talking about things such as depreciation methods and cost-of-goods calculations.

The real untapped fortune is with user buy-in. Market your plans to users, get their enthusiasm upfront, and it'll really pave the road in front of you. But if you tell them IS knows what's best, you'll lose them.

RATING: ★ if you can get management buy-in; bbb for user buy-in; don't underestimate the value of users' support.

❽ Keep the infrastructure reliable.

Worrying about workstations without having a reliable network is like worrying about the quality of toilet paper on the Mir space station before repairing the oxygen supply. Network outages flood the help desk with calls, take down large groups of users and require virtually every member of your staff to drop what he's doing and scramble. On top of that, network outages might just be the fastest way to lose users' confidence and severely tarnish IS's reputation.

While on-call for a vacationing network manager, I learned another reason for maintaining a stable infrastructure: It reduces the 3 a.m. phone calls that make your network staffers question their career and employment choices.

Components of a reliable network come in many forms. Some are cheap and easy, such as running extra cables in your wiring closets or using that extra server as an emergency spare. Others are expensive, such as having multiple T1 lines.

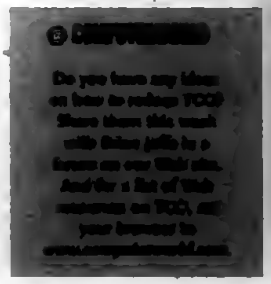
RATING: ★★★ — Don't worry about desktop TCO until you have a reliable infrastructure. That's where the big savings are.

BOTTOM LINE

TCO reduction isn't a goal in itself. I think it's better viewed as a catalyst for driving the delivery of environment improvements. Those improvements should not only save money, but also should make IS and end users more effective.

Of course, how much you have to spend depends on the state of your shop. My network engineers have been able to maintain a 99.2% level of network availability, which means they get sleep, and I can focus my resources on other TCO solutions.

So from where I sit, there are plenty of ways to reduce TCO. But like most money-saving opportunities, reducing it takes time — and probably some cash. After all, sometimes you may very well have to spend money to save money. □



Jaffe is an IT director in New York who frequently writes about the integration and management of IT in the workplace. He can be contacted at bdjaffe@compuserve.com.

Booth Bimbo Bingo

As thousands descend on Las Vegas for Comdex, some of the women on the exhibit floors hurt the cause of female IS managers

BY LAURA DIDIO

The more things change, the more they stay the same. And nowhere is that dichotomy more apparent than in comparing the women who will work the booths this week at Comdex/Fall '97 and the female IS managers who will attend the show. Talk about worlds colliding.

Female IS professionals have racked up impressive gains, breaking the glass ceiling and earning an average of 81 cents for every dollar their male IT counterparts make, according to Department of Labor statistics. And women are a common sight in IS departments; the Bureau of Labor Statistics estimates that women accounted for about 30% of the IS workforce last year.

But high tech isn't the only area in which the ranks of women are swelling: Scantily clad "booth bimbos," walking billboards for sexism, are also out in record numbers. Now, some may argue that that's only natural. This year's Comdex was expected to attract more than 2,100 exhibitors and about 160,000 attendees. The 33 modeling agencies in Las Vegas are booked solid. A random sampling of about six revealed that they were supplying from 20 to 120 women and men to work the booths and amble down the Comdex aisles in various states of dress and undress. Richard Weber, CEO of The Lenz Agency, which has been in business for 37 years, says models and showgirls who work Comdex can make $200 to $800 per day, not including tips. "And it's a fact that the more abbreviated the outfit, the bigger their tips are," Weber says.

But what type of impact does a blatant, in-your-face jiggle show have on professional women who have strived to erase the gender barriers in IS? Plenty, they say.

"The damage done by booth bimbos is immeasurable. They're on the edge of respectable," says Nora Miller, IS manager at the Northwestern Power Planning Council in Portland, Ore. "If professional IS women dressed like that, our male peers would think we were airheads. And if we dress too professionally, we're accused of trying to be like men."

Amy Bond, editor in chief and technology manager of the Women In Technology International World Wide Web site, agrees. "These women make it harder for the rest of us who are trying be taken seriously. I've seen them in ragged bikinis, leaving little to the imagination. I support everyone's right to make a living, and I've been unemployed in my time, but never that desperate," Bond says.

All of the female IS managers I spoke with wondered the same thing: What do their male counterparts think of these booth bimbos? Even Weber concedes that the freewheeling atmosphere of Vegas and Comdex "can turn normally conservative churchgoing family men" into crazy conventioneers who act like pubescent high school sophomores who do things they'd never dream of doing normally. At one Comdex show I attended, a minor league vendor got the bright idea of hiring booth bimbos outfitted in the skimpiest attire and adorned with twinkling lights to give attendees free shoeshines. Of course, the women had to bend over and kneel to do this. The drool factor was so high you'd never know Las Vegas was in the middle of the desert.

And how do the women who work the Comdex booths feel about their occupation?

"It's honest work. It beats waiting tables, and the tips are phenomenal," said one named Aimee.

"But it's incredibly sexist," I persisted.

"Yeah, so what? Las Vegas is the capital of 'T & A.'"

"Don't you feel like you're setting the cause of women back a couple of hundred years?" I countered.

"No way," Aimee said. "I also work as a showgirl, and if I'm such a bimbo, why are there so many professional women and housewives in the audience during a performance?"

Weber also distinguished between legitimate models and prostitutes who swarm Vegas during Comdex to work fourth-tier booths. "The vendors don't know these women are working for themselves. Once they solicit enough after-hours business, they don't show up anymore," Weber says. I tracked one of these women down and asked her if she didn't think her actions undermined women IS managers who attended the show. Tammi didn't see it that way. She says that despite the fact she can't tell the Internal Revenue Service how she earns her living, she's still got a lot in common with women IS managers. Tammi says she's a professional working woman, too. As if to underscore her liberation, Tammi said she's taken charge of her career. "I got rid of the pimp, didn't I?" □

DiDio is Computerworld's senior editor, LANs and operating systems.

COMPUTERWORLD

Laura DiDio will host a forum this week on the issues presented in this column: www.computerworld.com.

agitating

stimulating

Let's ban the word "information." Of course, that would mean renaming IS, which may also be a step forward.

LET'S FOCUS ON ACTION, NOT INFO

PETER G. W. KEEN

"Information" is increasingly a misleading and even damaging term. It lies behind the continuing fallacies that have driven fads, overexpectations and underdelivery on promises. The following are the main ones:

1) The information fallacy that almost destroyed the information systems field in the 1970s. That fallacy was that data is equivalent to information. The IS department — note the title that had replaced data processing as the organizational label for the "computer department" — assumed that its growing data resources constituted an inventory of value to managers. Instead, it largely created a data bureaucracy.

2) The knowledge fallacy that underlies many of the claims about the Internet, the Information Age, Information Society and the like. Here, the assumption is that information equals knowledge. No way. If that were so, we wouldn't be facing a continued crisis in our education system. We are an information-rich society, but are we really knowledge-rich? Does the wealth of the Internet as an information cornucopia in itself translate into knowledge? Of course not, whatever the wilder 'net denizens may hope

The emergence of knowledge management and data warehousing engenders the next dangerous notion: that knowledge equals action.

All these fallacies come from thinking of information as a good in itself. IS looked at how to organize it. The Internet/intranet movement has worked to make it available. The data warehousing school makes it easy to access. They are all supply-side conceptions of the role of technology. They treat information as independent of people. Reading through about 200 articles and conference proceedings on data warehousing for a recent project, I was struck by how little they have to say about action — real people making real decisions to have real impact. They don't look at how those real people — not some abstraction we call "users" — become informed. Equally, there's plenty of talk in the groupware and workflow field about sharing information but relatively little about the reasons for sharing.

Most of the impacts of technology on the basics of business and competition have been less about information than about coordination of logistics and the movement of information: point of sale and quick response, for example. ATMs, the exemplar of telecommunications in action, changed everyday life through service access; it's stretching matters to call this information technology. Data warehousing, a major step forward in enabling customer service, decision-making and planning, will succeed only if it pays attention to processes and people. Otherwise, all this new "knowledge" will sit in the warehouse unopened.

Think about your own firm. If a magic fairy instantly gave you absolutely all the information resources the company would ever need, do you think people would instantly know what to do with it and how to use it well? If not, why isn't education and support the largest part of your data warehousing budget?

Substitute for "information technology" a phrase such as "coordination technology," "business technology," "collaboration technology" or "learning technology" and you have a different focus — one that begins with people, not the information supply and its organization. In my readings on data warehousing, I felt my age. It was the decision-support systems (DSS) literature of the 1970s all over again. The DSS movement began with a strong focus on decision makers and decision processes; that's what made it the new mainstream. It lost that focus as PCs, spreadsheets and GUIs moved center stage. As a colleague who was a leader in the DSS field ruefully commented years later, we lost the "D" in DSS. The system, not decision and support, became the focus. The data warehousing and knowledge management fields are rediscovering too little and too late what the early DSS field knew: It's information use, not information supply, that we need to address and encourage.

Data supply doesn't create information. Information doesn't lead automatically to knowledge. Knowledge doesn't lead directly to action. Business action and impact are the goal. There's a distinct danger of the data warehousing and knowledge management fields overlooking this. Start with the people and their work, not the information. □

Keen's first book was Decision Support Systems: An Organizational Perspective *(1978). He is lightheartedly considering republishing it as* Data Warehousing Systems. *He can be contacted at peter@peterkeen.com.*

f.y.i.

Industry watch

Combating the skills shortage

How are some insurance companies handling the information systems skills shortage? Almost 20% of 80 firms surveyed by The Life Office Management Association, an Atlanta-based international association made up chiefly of life and health insurance companies, are using referrals from their vendors to find qualified applicants. And more than 40% are developing nonsystems employees into programmers, often to work on year 2000 mainframe projects.

People over technology

Investing in IS professionals rather than technology apparently makes a bigger difference among U.S. retail banks. A study from The Wharton School at the University of Pennsylvania in Philadelphia — "Examining the Contribution of Information Technology Toward Productivity and Profitability in U.S. Retail Banking" — indicates that additional investment in IT capital may have no real marginal benefits and may be more of a strategic necessity to stay even with competitors. But investments in IT labor have a much higher payoff (nearly $450 for every dollar invested). Researchers also found that the more profitable banks put more emphasis on maintaining IT systems, had more in-house development of IT and less outsourcing and gave IT staffers more input in project selections and funding decisions of IT investments.

Spending up in health care

Health care IT budgets are growing. A survey of 231 health care chief information officers by the College of Healthcare Information Management Executives confirms growth in industry spending. Hospitals and integrated delivery systems dedicated an average of 5.4% of their overall budgets to IT in fiscal 1996, up from 4.8% in 1995. The average IS budget for provider organizations was $6.7 million in 1995 and $7.4 million in 1996. Survey respondents expect their budgets for this year to rise as well.

Buyer's Guide

MORPHING the PC MODEL

RALPH BELLMER

By Kevin Burden

ONLY A YEAR AGO, PC users driven by price bought direct from a vendor. If support was their main concern, they bought through a reseller. But the distinction between direct and indirect is clouded today, with each camp copying some of what makes the other so successful.

The dramatic shifts in the PC industry — the copycat strategies and the blurred boundaries between the vendors and resellers — have sent many buyers back to re-examine what their vendor's competition has to offer, and often those buyers are finding many previous beliefs are no longer the truth.

Computerworld conducted in-depth interviews with a dozen PC managers at large organizations and a telephone survey of 152 other sites to identify the strengths and weaknesses of the competing PC acquisition models and to examine pricing and support trends.

Managers say support from direct vendors today appears more than adequate. At the same time, buyers say indirect vendors are advertising and

Morphing the PC Model, page 102

MORPHING the PC MODEL

CONTINUED FROM PAGE 101

negotiating more attractive prices than they did in the past. Still, preconceived notions may keep buyers from even investigating their options. Yet some of those ideas — highlighted below — may be myths, according to buyers.

"YOU KNOW WHAT YOU WILL GET FROM BIG-NAME VENDORS."

Inconsistency is a beef aired by users of the most prestigious PC companies as well as low-cost suppliers. For years, there has been a perception that name-brand vendors use known components and deliver similarly configured machines. Yet when buyers were asked why they changed vendors, they often said it was because their previous supplier, including name vendors, couldn't provide them with truly identical systems, even in a single order.

"We didn't expect to have this problem with Compaq [Computer Corp.]," says Norman Brideau, database administrator at Arbitration Forums, Inc. in Tampa, Fla. "But we've had several shipments of the same system with several different kinds of motherboards. It's ridiculous."

In addition, vendors that deal through indirect channels may have an additional concern when it comes to inconsistency. It's often the reseller, not the manufacturer, that controls the final product in those situations.

With inconsistency in system configuration, corporate information technology managers get headaches. Troubleshooting and upgrades are easier when you know the hardware you're dealing with, and there are always software and hardware compatibility issues to worry about if supposedly identical systems have different types of memory or BIOS.

Brideau did a bulk order of memory for a number of Compaq ProLiant systems of same model. His staff didn't realize they contained a variety of motherboards until he opened them up and discovered that some used parity single in-line memory modules (SIMM) and others used nonparity SIMMs. "We were livid — it threw off our entire upgrade schedule," Brideau says. "It was supposed to take us three weeks, and when the CIO came down on week six, he wanted to know what the hell was going on down here."

Tom Milazzo, director of information at the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill, ran into problems when he went to upgrade a fleet of IBM ValuePoint PCs. When he saw the number of different memory types he was dealing with, and their unorthodox BIOS, he knew he had discovered one of the reasons his network crashed daily. "I can't expect to build an infrastructure that stands up if I can't control the quality of my desktops," he says.

Dell Computer Corp. was the only vendor praised by the interviewed users for being adept at building systems with absolute consistency. Milazzo, who has been buying from Dell for two years, says, "Each order comes exactly the way I want them, all alike, right down to the specific drivers for my network boards."

"YOU ALWAYS SAVE MONEY BY BUYING DIRECT."

Not necessarily. Yes, even with industry-wide price chopping, users say they can save at least $500 per PC with direct vendors. Indirect vendors sometimes negotiate for lower prices, according to users and analysts, and even the direct vendor's $500 price advantage doesn't translate into a pure savings. Some users argue that the additional services available to them through their resellers are worth more than $500.

That wasn't the case for Compaq customer Jeff Collins, IT manager at Dynasty Technologies, Inc. in Kingwood, Texas. He recently purchased systems from Gateway 2000, Inc. and says he received no more, and no less, support from Gateway than from Compaq. He estimates $150 worth of his staff's labor goes into setting up each system. "We were doing the exact same thing when we bought from Compaq," he says.

With margins so low, "reseller support is almost nonexistent," says Michael Lind, PC support manager at Tredegar Industries, Inc. in Richmond, Va., who has been buying Compaq systems from his reseller, MicroSystems Warehouse in Lakewood, N.J., for the past three years. "I get most of my support directly through Compaq," he says.

Lind says he is mostly paying his reseller to help him stay ahead of the market. "I don't want to worry about configuring with the latest hardware or software. That's the value I look for." He may be typical of corporate managers in that he uses only a limited amount of the support for which he pays.

Dell systems come with one year of on-site support; three years of on-site service costs $99 per system, according to Chen Bowers, PC support manager at Bryan Memorial Hospital in Lincoln, Neb. "And since we estimate a 20% savings per system [by buying direct], of course we're saving money," she says of the $99 option. Yet, her group calls Dell only when warrantied components fail or when Dell technicians can fix a system faster than her staff can. Bowers says her staff installs and configures the software on each system, except for the operating system and office products that are installed by Dell, and sets up each system on users' desktops.

"INDIRECT CHANNELS MEAN BETTER SUPPORT."

That depends on how much support you need. If you are intent on doing your own installs, memory upgrades and drive replacements, and your IS team is large enough to support your user base, direct vendors may deliver all the basic support you need. However, a direct vendor would never cut it for someone like Dale Cochrane, PC service manager at Humana Insurance Co. in Green Bay, Wis. He has 1,400 PCs and an in-house support staff of 15.

Cochrane says his reseller earns every cent supporting Humana. MicroAge technicians come by twice a week to pick up Hewlett-Packard Co. systems covered under warranty, he says. "I can't afford to have my people calling vendors all the time."

Then there are users like John Mazzella, information systems manager at Commonwealth Scientific Corp. in Alexandria, Va. He stopped buying Compaq systems because he didn't want to ship them out to be fixed. He wants a single point of contact at the vendor, to explain the problem and to have parts delivered the next day. "Gateway does this. That's all I need," he says. "I'm paying very competent technicians on my staff. Money going to a VAR would be like paying double."

A year ago, the scare of inadequate support was all that was holding back Brideau from buying Dell or Gateway systems. But once he had totaled up the amount of support he used from Vanstar Corp., his Compaq and IBM systems reseller, he decided it didn't make sense to pay for what he wasn't using. "Telephone support was about all we used," he says.

"IT'S BEST TO STICK WITH YOUR CURRENT VENDOR."

Users interviewed here say it's true. No matter how good the deal appears with other vendors, users say the relationships they have built with their vendors are worth much more than any short-term perk.

Although vendors are always trumping each others' value, price cuts and additional services are only good until the rest of the market follows suit. But a good vendor relationship — one in which your sales representatives know you, your business and the equipment you already have — takes time to develop, and users say it shouldn't be thrown away to save a buck.

Cochrane has certainly had troubles with his reseller, and with a $100 million annual budget, he has a lot of vendors vying for his business. "I can't say I haven't been tempted by a few of the offers," he says. "But cost is not a big issue for us. Having a strong relationship with our reseller is."

Bowers is another who says she knows better than to be tempted by what may appear to be a better deal. "I wouldn't sacrifice the history I built with Dell for anything, particularly price," she says. Dell has catalogued every system Bowers has bought. "I give them the service tag number, and they know exactly what's in the machine and how it's configured," she says.

To get the most out of the relationship, users say it's important to learn the breadth of services vendors offer. There is a tendency to view direct vendors such as Dell and Gateway as mass marketers of low-end PCs. "They sometimes have trouble articulating all they offer," Milazzo says.

And, although time can strengthen relationships, none is required to build one. "It's all about good communication," Cochrane says. Being totally honest from the start is the best advice users say they can give for quickly building relationships that work for everyone. Air all your expectations of the vendor as soon as possible, particularly about service and system availability. "These areas can sour any relationship if you're not on the same page," Cochrane says. □

Burden is Computerworld's feature writer, Buyer's Guide.

One of data sharing's greatest challenges is unlocking data trapped behind legacy systems so more data warehouse users can take advantage of it. Only then can you even think about leveraging it via the Web. Sound difficult? It is.

Unless you have EMC Enterprise Storage™ with DataReach.™* Putting EMC at the center lets you extract, transport and load legacy data 5 times faster than through the network. So it's available to anyone who needs it right away, all the time. Think about that when you hit another wall in your data warehouse. To find out more, call 1-800-424-EMC2, ext. 148, or visit us at www.emc.com.

Not Without EMC Enterprise Storage It Can't.

EMC²
The Enterprise Storage Company

*Jointly developed, marketed and supported with BMC Software. Article reprinted from ZD Internet Magazine, June 1997. ©Ziff-Davis Inc. 1997.

EMC² is a registered trademark, and EMC, EMC DataReach, EMC Enterprise Storage and The Enterprise Storage Company are trademarks of EMC Corporation. ©1997 EMC Corporation. All rights reserved.

SNEAK PEEK: Power, pricing and production in '98

By James M. Connolly

The funny thing about the PC industry is that no matter how turbulent today seems, you'll look back a year from now and think these were the sane times. The craziness just doesn't end.

The coming months will bring faster, cheaper PCs with new options and vendors grasping for the best way to sell, just like 1997. Some of the turmoil stems from causes information technology managers have come to accept. Faster chips give you more bang for the same buck you spent the year before, and new technologies — such as Universal Serial Bus and Accelerated Graphics Port (AGP) cards in 1998 — will boost overall system performance.

Where things get really confusing for IT managers is in the purchase process. Prices tumbled in 1997, and the buying model was recast as buyers re-examined the direct vs. indirect argument and more vendors embarked on build-to-order manufacturing. Price cuts and build-to-order strategies will continue to be hot in 1998, according to analysts.

The average price of a corporate PC will continue to slide in the coming year, according to analyst Chris Goodhue, vice president of end-user computing at Gartner Group, Inc. in Stamford, Conn.

"Intel and the OEMs are being really aggressive on Pentium II rollouts, and those Pentium IIs are falling right into the pricing sweet spots," Goodhue says. Bargains still can be found in traditional Pentium machines. "Maybe customers can save money by not rushing out to buy the latest. I think Pentiums will be viable through most of 1998, or at least the middle of '98."

For many types of users, a Pentium may be fine at this point, as long as it has enough memory, although the Pentium IIs may be a good investment based on their attractive pricing and the fact that the architecture will be around for a while.

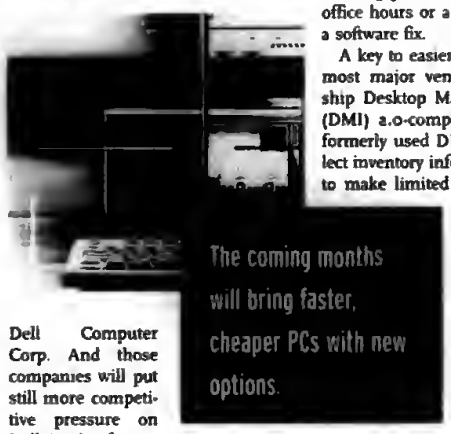
Both Goodhue and Rob Enderle, senior analyst at Giga Information Group in Santa Clara, Calif., raise red flags for buyers looking at the sub-$1,000 PCs that caught so much public attention in 1997.

Enderle has seen some corporate interest in those low-end systems, but he advises IT managers to weigh the low price against the labor costs involved with replacing the computers a year earlier than they might have to with mid-range machines.

Goodhue says although the sub-$1,000 PC is worth considering, buyers must keep in mind that the system seldom includes a monitor, and the published price might only buy older technology, such as a 133-MHz Pentium or a nonstandard design.

One reason prices are falling is because vendors are changing how they do business. With build-to-order strategies, vendors assemble PCs only after a customer books an order. Vendors aren't stuck with large inventories of preconfigured PCs, and buyers can better customize their systems.

Build-to-order strategies and the ongoing price cuts are largely a result of IBM, Hewlett-Packard Co. and Compaq Computer Corp. reacting to the success of lower cost, direct vendor Dell Computer Corp. And those companies will put still more competitive pressure on Dell in the future, according to Goodhue.



"To be honest, I don't see the No. 1 driver in the choice of a vendor to be direct or indirect. Very simply, it's price. Dell enjoys today, and has enjoyed for some time, a 10% to 15% price advantage. At the end of the day, Dell is on the short list because they are putting price pressure on other vendors," Goodhue notes.

Goodhue says IT managers must be aware of how changes in the industry will impact them and how they will change their relationships with their PC manufacturers. "Overall, these initiatives are going to be good news for customers because they are going to result in lower prices," Goodhue says. "However, in the near term, some of the build-to-order programs and channel assembly programs are just starting to ramp up, and there could be problems. It's worth understanding things such as who is going to assemble my product and what assurances I have on availability."

Enderle offers two pieces of advice for IT managers. First, when dealing with build-to-order strategies, be aware that your system — particularly less common components — may not have been tested as thoroughly as a standard configuration. Second, he says, "Buy big. Be important to your vendor, and then if you have a support problem, they will treat you a lot better."

One of the most important technology developments Enderle sees coming involves system management.

"We're looking for a set of equipment that is much more easily managed from a central site," he says. The person doing the central management might be part of an IT organization running preventive maintenance after office hours or a vendor downloading a software fix.

A key to easier management is that most major vendors are starting to ship Desktop Management Interface (DMI) 2.0-compliant PCs. Managers formerly used DMI 1.0 largely to collect inventory information on PCs and to make limited changes. Now, with DMI 2.0, those managers will get a better interface and the ability to make significant changes to a system, such as modifying the BIOS and formatting a hard disk from a central location, Enderle says.

User sites will also benefit from vendors making PCs that boot up faster. "The advantage it provides to the IT manager is that if they have to turn on the machine remotely, they won't have to wait for the machine to start, and that translates into labor savings," Enderle says.

Another technology that analysts agree will be hot in '98 is AGP, which off-loads graphics processing from the CPU to a special bus, resulting in faster overall system throughput.

Users can expect a flood of peripherals based on the Universal Serial Bus architecture starting at Comdex/Fall '97, with digital cameras for still images and videoconferencing being particularly hot in 1998. □

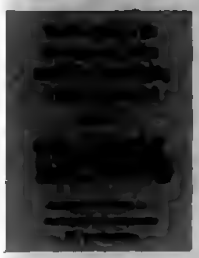
Connolly is Computerworld's *technology evaluations editor.*

ALL THE TALK ABOUT PC PRICE CUTS TRANSLATES INTO A 13% SAVINGS FOR BUYERS

BY KEVIN BURDEN

Price cuts — How much of what's promised will you actually see, and what other ingenious ways will vendors think of to make up for those cuts by sticking it to you? You might be a bit skeptical of the lures vendors cast to get your attention, but the PC market is showing some credibility here.

A telephone survey of 152 corporate PC buyers shows users are getting very close to what vendors promise. Computerworld's Information Management Group asked these users what they would realistically expect to negotiate from a vendor that announces a 15% list price cut. Nearly half are confident they would get the full 15%. The average is just under 14%.



But enough of the hypothetical. Ninety percent of the users say they are paying an average of 13% less for systems than they were six months ago.

But the cynic in most of us says vendors are surely socking it to us in other ways. No, 60% of these users say.

And the 40% who have seen these savings offset by vendors say it's only because they are buying more advanced PCs for the same cash. "The size of the check I write is no different. But I'm seeing more bang in the systems I'm buying," says John Berryhill, systems administrator at AutoGlass Systems, Inc.

Eighty percent of the respondents say their typical users are getting better systems than they are use to, and 64% say more advanced systems will go to their high-end users.

However, price cuts haven't persuaded users to buy more services or to shop for vendors with the best price. Only 9% say they are paying extra cash for extended service plans. And more than 60% say there isn't any reason to change vendors, with many of those buyers noting that all vendors have lowered prices equally.

Today's Top Stories
online
IDG.net Smart Search
Stop
WORLD
PC WORLD

IS goes shopping on the Web

REVIEW: *PC vendor Web sites offer flexibility and convenience for buyers doing research and placing orders*

With electronic commerce emerging, the expectation is that we'll all be making our purchases online in the very near future.

By Thomas Lamoureux

As an information systems manager, I've been hearing about commerce on the Internet for quite some time, but I questioned whether there was any extra value in purchasing computer equipment online. After trying out four PC vendors' online buying sites, I realized that, yes, there are some definite advantages over conventional telephone sales.

Online purchasing offers choice and flexibility you just don't find in dealing with telephone sales representatives. You get to spend as much time as you want comparing products from competing vendors, pricing the options, reviewing the wealth of product specifications and, in most cases, placing an order. And you can do all of this when it's convenient for you, not just when it is convenient for your vendor.

You don't have to wait on hold, you never have an inexperienced sales representative, and when was the last time you dealt with a cranky Web site?

I visited each site I reviewed as would a typical corporate buyer — someone who knows what type of machine he wants but would need to look through each vendor's product line to identify the model that most closely fits his need. I did research to find the right model, worked through the online configuration process to specify the options I wanted, determined the price and then walked through the ordering process. I looked at the quantity and quality of product information, the variety of options available in the online configuration process, the ease and completeness of the order process and how close the vendor could get to the desired configuration.

I set out to shop for a high-end desktop for a power user. I wanted an Intel Corp. Pentium II-based machine running at 266 MHz with 64M bytes of random access memory, a video card with at least 4M bytes of video RAM, a 17-in. monitor, a 9G-byte SCSI-based hard drive, an Iomega Corp. Jaz drive for offline storage, a Microsoft Corp. Natural keyboard and a 10/100M bit/sec. network card. I didn't specify name brands for the video card, hard drive or monitor, as long as the products used could be identified as mainstream products.

Because the configuration was pretty basic, all of the vendors were able to deliver my power machine with the exception of the Jaz drive. None had a Jaz drive as an option, though most had Iomega Zip drives.

The SCSI selection was fairly consistent, with each vendor offering the Seagate Technology, Inc. 9G-byte hard drive and an Adaptec, Inc. 2940 controller. Monitors ranged from name brand to vendor brand, and most vendors had ample selections. One surprise was that Dell Computer Corp. didn't offer the Natural keyboard in its online configuration forms. I could order a Natural keyboard, but only after drilling a few levels to the accessories page.

Among the sites reviewed, Dell had the best overall presence, with Micron Technology, Inc. a close second. Dell's site provides a lot of information and is very well-organized. Dell also provides the most options in configuration and order entry, and it was the only site I visited that offers the ability to review orders. Micron has ample online information and offers a wide range of features in configuration and order placement. Although it doesn't offer an order review, Micron uses online technology to make its sales staff available. Gateway 2000, Inc.'s site offers good product information, but it was the hardest to work through. It offers more model numbers with slightly varying configurations but offers the fewest options when configuring the machine. □

Lamoureux is director of support services in Computerworld's *systems department.*

DELL COMPUTER CORP. (Best overall presence)

www.dell.com

RESEARCH

When you enter the Dell site, you are given three ways to proceed. You can review product information by going directly to that type of product (for example, desktop or workstation), drill down to customized configurations by type of business (for example, home or business), or go directly to the online purchase menu and, within two clicks, arrive at the configuration screen. The online information presented at the Dell site is ample and well-organized.

Dell also provides suggested configurations to allow you to determine the optimal configuration for a given type of user (or computer use). There are, however, places where the information is sketchy, such as the workstation specifications, which never mention that the workstation contains an integrated network card.

CONFIGURATION

The online configuration screen, in addition to allowing the full range of options, provides configuration cross-checks, both as "online hints" and under the options themselves. For example, it suggests that an integrated drive electronics-based CD-ROM drive is compatible with a SCSI hard disk only when Windows NT is chosen as the default operating system. Although not complete — it allowed mismatched processors and memory modules exceeding the number of available slots — the error-checking was far better than any other site reviewed. In the configuration process, the only confusion came when the online configuration screen mentioned an option for additional network cards. Unfortunately, I wasn't told that the model included an integrated network card, and in my first pass, I assumed this was where I could choose the primary network card. It wasn't until I reviewed the suggested configurations that I realized the workstation came with an integrated network card.

PURCHASING

Once you choose the configuration, you can place the selected machine in a "shopping cart," which lets you configure and purchase additional machines. When your selections are complete, you can go back to review individual items or place the order (or "Checkout," as Dell calls it). If you choose Checkout, you are prompted with a secure form requesting bill-to and ship-to contact information, demographics on your organization, your choice of delivery options and freight carrier and the method of payment. Dell even lets you enter special shipping instructions.

SUMMARY

The Dell site was very well-organized, making it equally suited to those who are familiar with its product line and those who aren't. It provided the best online documentation of the sites I reviewed, as well as very good product options and a solid, full-featured order-entry process. Dell was the only site that offered the ability to place multiple configurations in one order and provided an online order-review process. Aside from the network card problem, it was easy to work through this site. It provided the most flexibility and was the most enjoyable site I visited. From an "online experience" standpoint, Dell's site was second to none.

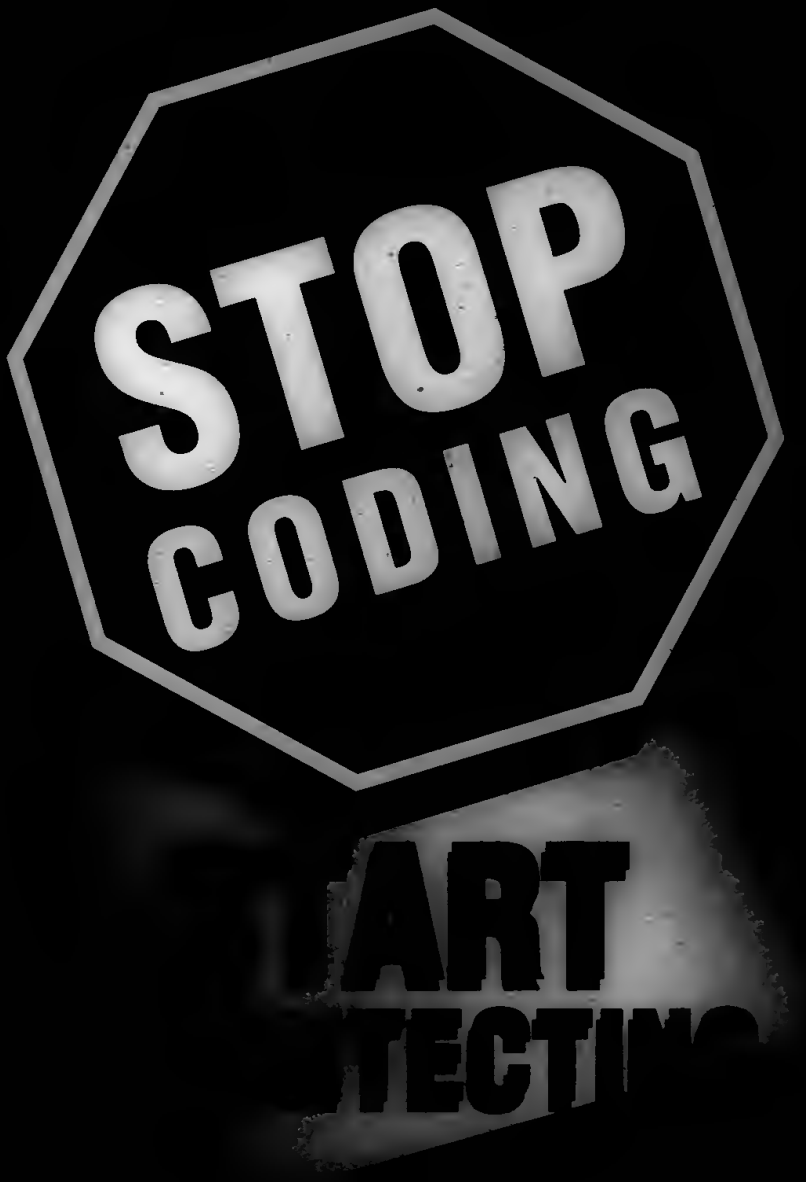
MICRON TECHNOLOGY, INC. (A close second)

www.micron.com

RESEARCH

When you enter Micron's site, there are two ways to proceed. You can either drill down by specific purchase types (home or small business) or specific product lines (such as workstation or portable). Although there are only two purchase type options (home and small business), each is complete, with good descriptions of the individual product lines and features. When drilling down to the product lines, you are presented with a list of the specific models under that product line. Each model has a brief de-

IS goes shopping, page 106



Just Code the Cool Stuff

www.5ynon com

CONTINUED FROM PAGE 104

scription of the features. Once you select a specific model, you receive a more detailed description and a list of options. You also have the choice of reviewing the model specifications. The information presented is ample, though it isn't as clear and well-organized as the other sites reviewed.

CONFIGURATION

Once you have chosen the model you wish to configure, you can proceed to the "Build and Buy" configuration screen. The configuration screen doesn't contain error validation and thus allows you to order invalid configurations. Also, the model choice contains the processor speed. Once you get into the configuration screen, you're no longer allowed to change the processor. Another configuration option that isn't clear is that certain models (the Powerdigm models) come only with Windows NT, while desktop models allow the choice of Windows 95 or Windows NT. Generally, there are many configuration choices for each of the given options and each of the options is clearly described.

PURCHASING

Once you have selected the options and calculated the system price, you are given two choices. You can request more information about your configuration or you can place your order. Order placement allows the entry of ship-to and bill-to contact information,

company demographics, payment information and special instructions. Payment type contains credit-card information only — purchase orders or company checks aren't allowed as payment options. One procedure Micron adds to the buying process is that the order isn't accepted until it's processed by a sales rep. It surprised me that the other sites didn't do the same. The payment options are limited, but the order process allows the collection of all the pertinent information. Although there are no references to the expected amount of time for a sales representative to call or average delivery information, Micron was the only site visited to provide an "information request" function.

SUMMARY

Micron's site contained enough information to make an informed purchase. The configuration options were among the best, and the addition of the order and information request screens made the process complete. Information wasn't organized as clearly as it was at other sites; when you choose a configuration, you have to back out if you realize the chosen model lacks features you desire. A feature being touted on the Micron site allows the online buyer to contact the Micron sales department either by an interactive chat session or using Microsoft Corp.'s NetMeeting. This feature was still in a beta state, but I didn't find it at any other reviewed site, and it may give Micron another method to provide solid presales customer support.

COMPUSA, INC. (Reasonably complete)

www.compusa.com

RESEARCH

Although it isn't a first-tier direct sales computer manufacturer, CompUSA is moving in the direction of online sales and has its own custom-configured brand. CompUSA has only two main product lines (most other vendors have four to six), so the selection is fairly limited. On the other hand, one advantage is the way the site is set up: It provides concise descriptions of the two lines and then allows you to drill down by selecting the processor type and then working to the options screen. Of the sites reviewed, this was the easiest on which to determine the desired model and then configure it.

CONFIGURATION

The "Online Configurator" is CompUSA's custom configuration model. It shows the two discrete models — the American and the American PRO — and provides brief descriptions of each and then prompts you to choose a processor for a given model. Once you choose the model/processor combination, you see the configuration screen. On this screen, all configuration options are accessible, with the exception of the processor. As with most sites, it displays the base price prior to making configuration changes.

CompUSA hasn't attempted to build validation logic into the Online Configurator and thus allows a buyer to make such invalid choices as selecting a SCSI hard drive without choosing a SCSI controller. Again, this seemed to be the norm across most of the sites reviewed.

PURCHASING

Once your machine is configured, the next choice with CompUSA's site is to process the order. First you are asked to review a list of the options you chose. If you have already registered with CompUSA, you can place the order. If you haven't registered, you can register by providing street address, telephone number, fax number and electronic-mail information, along with the selected password. Once registered, you confirm the shipping and billing information through CompUSA's secure site and then complete the order. The site claims the company will build and ship within 10 days.

SUMMARY

The CompUSA site was reasonably complete. Although the product lines are fairly limited and don't provide a mechanism to contact sales or inquire about availability, this site makes up for its shortcomings with concise presentation of background information and a straightforward order process.

GATEWAY 2000, INC.

(Hardest site to work through)

www.gw2k.com

RESEARCH

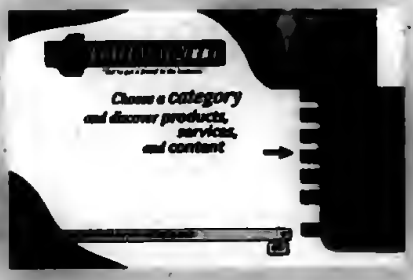
Entering the Gateway site, you are presented with two options. You can drill down to preselected product models, or you can choose the type of purchase you wish to make (for example, business or home computer). By choosing purchase type, you are presented with the product models most applicable. In the case of a corporate purchase, for example, the preselected categories are network-ready computers, servers and portables.

Each choice presents slightly different models, but for each model shown, there is a checklist of standard options, which makes it easy to choose the appropriate model.

CONFIGURATION

Once you've chosen the model you want, you can view more information about the model, including detailed product specifications, product benchmarks or reviews, or you can proceed to the configuration stage. In the configuration screen, each model is listed with a base price.

Rather than provide a broad range of options at the configuration level, Gateway offers multiple models and configurations for each processor type and then limits options in the configuration screen. This was confusing because, on my first pass, I chose



business purchase, network-ready PCs and what seemed to be the highest-end workstation. Then I found out I couldn't specify Windows 95 or deselect the Intel Corp. LANDesk client software, so I had to go back and choose a different model before I could get the options I wanted.

ORDERING

After the configuration process was complete, I chose the "buy" option, expecting to either register and specify the shipping and billing information or to be presented with a way to forward my order to a sales rep to confirm the details. Unfortunately, after choosing the "buy" option, I was presented with a recap of the order, a quote number and instructions to attach a printed copy of the quote with the purchase order. This was a rather disappointing end to one of the more difficult online configuration processes reviewed.

SUMMARY

The organization of the home page provided the best set of choices, but subsequent levels were more confusing. They provide too many configurations from which to choose and only limited options for each. The purchase process (or lack thereof) seemed to be sadly consistent with the way the remainder of the site was organized. Overall, Gateway's site was disappointing

51 issues for $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew

Single copy price: $3.00

*U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?

☐ Yes ☐ No

B4L7 R

51 issues for $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew

Single copy price: $3.00

*U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?

☐ Yes ☐ No

B4L7 R

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

In Depth

Pl

JIM BOURG/GAMMA PRESSE IMAGES

the GAME

Microsoft is learning to make its voice heard in Washington – and Washington is all ears

By Kim S. Nash and Carol Sliwa

MICROSOFT CORP.'s Washington lobbying office isn't exactly smack dab in the corridors of federal power. In fact, the software giant's operation, located in the Chevy Chase Pavilion Shops mall, barely lies inside the bounds of the District of Columbia.

But don't let the hideaway locale fool you. Microsoft intends to be a force in U.S. politics.

In less than two years, Microsoft has spent more than $2 million on professional lobbyists and campaign contributions. And that sum, which comes from disclosure forms filed with the U.S. House of Representatives and U.S. Senate, doesn't include political fund-raisers or software donations.

Of course, Microsoft certainly isn't alone in playing politics. The $11 billion Redmond, Wash.-based company isn't even the biggest lobbying spender among computer industry vendors — Washington graybeard and antitrust veteran IBM is.

But Microsoft has learned well how to work Washington.

Several recent laws and policies make Microsoft's $2 million investment look like a bargain:

■The extension of the Research and Development Tax Credit. Alongside other large technology companies, Microsoft fought tooth and nail for this tax break on any R&D spending over a base amount.

Playing the game, page 110

How a law becomes a Bill

1990

EARLY 1990. Federal Trade Commission (FTC) antitrust investigators start to look at Microsoft because of an agreement it signed with IBM regarding DOS and OS/2. The pact was announced at Comdex.

Microsoft hires Bill Gates' father's law firm, Preston Gates Ellis & Rouvelas Meeds, as counsel in Washington.

1992

Microsoft creates its own political action committee (PAC), which gives $22,250 to federal candidates and registered committees in 1991-92 election cycle.

EARLY OCTOBER. Steve Ballmer, Microsoft's No. 2 executive, introduces Vice President Al Gore at a fund-raiser; Ballmer, a Harvard University buddy of Gore's, gives $2,000 to the Clinton/Gore campaign.

OCT. 20. Ballmer writes a letter to software executives in the Pacific Northwest urging them to support Clinton/Gore.

NOVEMBER. Gates votes for Clinton/Gore ticket.

DECEMBER. The FTC files a 250-page report that recommends a court injunction against Microsoft; it alleges the company practiced unfair business tactics.

1993

EARLY JANUARY. Microsoft cosponsors a Washington reception for Speaker of the House Tom Foley (D-Wash.).

FEBRUARY. After several days of intense lobbying by Microsoft rivals, including Provo, Utah-based Novell, Inc., the FTC votes on whether to take action; it deadlocks at 2-2.

SUMMER. Gates flies to Washington to lobby FTC commissioners.

EARLY JULY. Sen. Howard Metzenbaum (D-Ohio) writes a letter to FTC Commissioner Janet Steiger, an appointee of George Bush, urging that the FTC turn the case over to the U.S. Department of Justice if another deadlock occurs. Sen. Orrin Hatch (R-Utah) writes a similar letter.

WEEK OF JULY 15. Gates visits all four voting FTC commissioners.

JULY 21. The FTC deadlocks 2-2 again on whether to take action against Microsoft.

JULY 28. The Justice Department asks to see the FTC's Microsoft files. (Experts say it is unusual for the Justice Department to pick up an antitrust case the FTC has rejected.)

JULY 29. The Justice Department receives the FTC's Microsoft files and takes over the investigation.

1994

In the 1993-94 election cycle, Microsoft and its PAC give $42,741 to federal parties and candidates.

JULY. The Department of Justice submits a consent decree to Judge Stanley Sporkin, who spends most of the next year criticizing it; he ultimately rejects it (see August 1995).

ILLUSTRATIONS BY BARRY BLITT

Playing the GAME

CONTINUED FROM PAGE 109

- The Foreign Sales Corp. provision, which lets companies take a 15% tax break on profits generated outside the U.S.
- The Clinton administration interceded in a dispute with the U.S. military and smoothed the way for the Federal Communications Commission to grant Bill Gates and partner Craig McCaw a worldwide radio frequency license for satellites.

Microsoft shares many of its lobbying successes, such as the tax breaks mentioned

Where the MO

Like any multi[illegible] corporation, Microsoft [illegible] causes in many [illegible] junction with other [illegible] antitrust, intern[illegible] attention

Taxes

No one likes to pay taxes. But while you may have indulged in some kvetching and Pepto-Bismol in April, Microsoft hired 10 lobbying firms this year and last to fight the tax man on several fronts. Four of those firms did nothing but tax work — either lending advice or trying to convince the House, Senate, Department of Treasury and Department of Commerce that Microsoft should get a better deal.

It worked.

Microsoft, with hundreds of other technology companies, fought hard to get an extension of the Research and Development Tax Credit. That's where Congress lets companies take up to a 20% tax break on any R&D spending over a particular base amount, which is calculated using the company's previous R&D rates.

Some call it corporate welfare. The federal Office of Technology Assessment has found that mostly big companies — and not struggling start-ups — have benefited from the credit.

But Microsoft, which has $9 billion in the bank, got its wish. An extension of the credit was included in the Balanced Budget Act of 1997 that President Clinton signed Aug. 5.

Elsewhere, Microsoft spent big on lobbying to get tax protection on sales made outside the U.S. The so-called Foreign Sales Corporation (FSC) provision essentially lets companies take a 15% tax break on profits generated outside the U.S. Rep. Jennifer Dunn (R-Wash.) cosponsored the proposal with Rep. Robert Matsui (D-Calif.).

Until this summer, it was unclear whether software companies could form FSCs. But Dunn's bill passed, and Microsoft FSC Corp. in the U.S. Virgin Islands became legitimate. Had the law been in effect during Microsoft's 1997 fiscal year, the company could, in theory, have paid 15% less in federal taxes on the $1.48 billion in operating profit that came from beyond U.S. soil.

"That could easily be millions of dollars saved," said Robert Ross, president of the FSC/DISC Tax Association in White Plains, N.Y.

Microsoft also filed a suit in U.S. Tax Court in August 1996 claiming it was overtaxed by $19 million in 1990 and 1991. The case is still pending. Hey, with a 1997 U.S. tax bill of $1.1 billion, every bit helps.

But if you've ever been audited, take heart: The Internal Revenue Service is examining Microsoft's tax returns for 1992, 1993 and 1994, according to the fine print in Microsoft's 1997 annual report.

Antitrust

The U.S. Department of Justice asked a federal court last month to fine Microsoft $1 million for every day it compels PC vendors to bundle its Internet Explorer browser with the Windows operating

above, with other computer industry vendors. And compared with the lobbying heavyweights from, for example, the tobacco and automobile industries and organized labor, the company is thrifty (see story page 112).

But Microsoft, already a dominant force in the high-technology sector, is spreading its influence to industries such as telecommunications, electronic media and the Internet. Indeed, Microsoft ranks with the most powerful companies in the world.

Intellectual property, encryption and trade issues are top priorities, according to Jack Krumholtz, Microsoft's lead lobbyist in Washington. The vendor, for example, wants stronger protections written into copyright laws.

On encryption, Microsoft wants to loosen laws banning the shipment of products with strong cryptography.

Yet there is another big reason Microsoft wants to become Washington-savvy: antitrust.

Microsoft's presence in the nation's capital has grown from zilch at the beginning of this decade. Then again, the company has arrived fashionably late at many a technology party only to go on to dominate.

Will politics be just another operating system war? □

Nash and Sliwa are Computerworld *senior editors. Their Internet addresses are kim_nash@cw.com and carol_sliwa@cw.com.*

NEY goes

system that gets preinstalled on their hardware.

The Federal Trade Commission (FTC) has also expressed interest in Microsoft's browser marketing tactics, as have the attorneys general in six states, the European Commission and Japan's Fair Trade Commission.

These investigations have so far changed little about how Microsoft does business. However, Microsoft isn't waiting until the current probes grow legs.

Kimberly Ellwanger, hired by Microsoft in 1992, and Jack Krumholtz — both lawyers with public policy expertise — are among the lobbyists entrusted with the chore of convincing Congress and other Capitol Hill politicos.

Indeed, of all the lobbying money Microsoft spends, one of the biggest chunks goes to Ellwanger, Krumholtz and their six lobbyist colleagues. The team, which handles other issues as well, has drawn $140,000 as of June, according to disclosure forms filed in the House and Senate. Last year, it got $558,000. That seems like short money when the alternative is to put a million bucks in Janet Reno's parking meter every day.

Krumholtz said he "focuses primarily" on other issues but does get involved when questions about software competition arise.

International relations

With 40%, or $4.53 billion, of its $11.36 billion in sales last year generated outside the U.S., foreign trade is a big deal to Microsoft. To ensure it stays that way, Bill Gates has traveled the globe in the past several months. He met last month with world leaders in the U.K., Germany, Russia and Switzerland. In June he was in Japan and Korea. And in March he was in India, where Gates was hailed as a celebrity. (Of course, it's not unusual for corporate titans of all stripes to do a fair amount of globe-trotting.) But with Gates, it's a media event at almost every stop.

Here's a sampling of other international dabblings.

China. When the question arose early this year of whether the U.S. should renew Most Favored Nation trading status for China, Microsoft handed the project to Gates' father's Washington law firm. Preston Gates Ellis & Rouvelas Meads, like other lobbyists, hustled to keep the massive — and growing — market open for U.S. products.

Brazil. The Business Software Alliance (BSA) recently did some of Microsoft's bidding. In May, the trade group sent a representative to help hammer out the intellectual property provisions in the Free Trade Area for the Americas (FTAA) pact that President Clinton crossed Latin and South America to promote this fall. FTAA would lower tariffs for companies doing business in the 34 countries involved — sort of a supersize North American Free Trade Agreement.

Companies from other industries were there, too. But the large Microsoft contingent caught the attention of James Love, director of Ralph Nader's Consumer Project on Technology.

"I didn't see another American software company in the room," Love says.

By the way, no one will reveal how much of the BSA's $20 million budget Microsoft contributes, but it is said to be the majority. Critics contend that the BSA is little more than a mouthpiece for Microsoft — a charge vehemently denied by Robert Holleyman, BSA's director.

— Kim S. Nash and Carol Sliwa

AUGUST. Gates and President Bill Clinton golf on Martha's Vineyard.

1995

Nathan Myhrvold, Microsoft's chief technology officer, is assigned to study how Washington works.

SPRING. Microsoft opens a Washington lobbying office and hires Jack Krumholtz.

APRIL. Microsoft drops proposed acquisition of Intuit, Inc. after the Justice Department files suit to nix the deal.

AUGUST. The Department of Justice concludes investigation of Microsoft with a consent decree that critics deride as a wrist-slap. (History: The decree was originally proposed in July 1994 but was rejected by Judge Sporkin.) The Justice Department and Microsoft protest that Sporkin should be removed from the case; he is. The decree is assigned to Judge Thomas Penfield Jackson.

FALL. Microsoft hires a second lobbying firm: Downey, Chandler, founded by former Rep. Thomas Downey (D-N.Y.) and Rod Chandler, former Republican congressman from Washington state.

NOVEMBER. After they heavily lobby lawmakers in several countries, Gates and Teledesic partner Craig McCaw overcome one hurdle in a plan for a global satellite network: An international body identifies a special band of radio spectrum for use by companies planning such networks.

1996

For the year, Microsoft pays $1,140,000 to lobbyists.

In 1995-96 election cycle, Microsoft and its PAC give $126,500 to federally registered committees and candidates. That's almost three times the amount it spent leading up to the 1994 election and more than five times greater than the 1992 election.

Microsoft helps fund a dinner for First Lady Hillary Rodham Clinton in Seattle and annual Republican House and Senate gala dinners in Washington.

MID-1996. Microsoft hires Grover Norquist as another outside lobbyist. He is a conservative who specializes in tax issues and is said to be close to House Speaker Newt Gingrich and other Republicans.

LATE JULY. Microsoft joins Apple, Intel, Compaq, Dreamworks, the Directors Guild of America and the International Photographers Guild in a new lobbying organization called Americans for Better Digital TV.

SEPTEMBER. The Justice Department starts examining Microsoft's browser practices.

Microsoft donates software to both major parties for their conventions.

DECEMBER. Gates is floated as possible participant in Clinton's inaugural festivities. He doesn't participate.

1997

JANUARY - JUNE. Microsoft pays $660,000 to outside lobbyists for Washington work.

How a law becomes a Bill, page 112

How a law becomes a Bill

CONTINUED FROM PAGE 111

MARCH 14. The FCC grants Gates and McCaw a worldwide license for a specific radio frequency needed to advance their plan to launch 840 low-orbit satellites to circle the globe. The Clinton administration helps navigate a dispute among Gates/McCaw and the U.S. military and Associated Communications LLC, a wireless company.

MAY 8 - 9. A Microsoft-sponsored CEO summit takes place at Gates' house. Attendees include FCC Chairman Reed Hundt, Al Gore and 1996 presidential candidate Steve Forbes.

EARLY JUNE. Gates goes to Washington with nine other software CEOs, meets with Gore, Commerce Secretary William Daley and lawmakers to talk about software industry issues, including copyright reform, immigration and satellite communications.

JULY. The Clinton tax bill includes a big tax cut for software companies, from which Microsoft will benefit the most.

JULY 30. Gates speaks to the National Governors' Association in Las Vegas about how much better computer systems would make state government.

As of September, Microsoft and its PAC give $44,000 to federal party committees and candidates.

SEPT. 12. Microsoft holds a policy briefing in Washington to outline its stances on major issues before Congress and tries to dispel the notion that the company is competing unfairly in the browser market.

SEPT. 30. Microsoft releases Internet Explorer 4.0, a version of its Web browser that the company claims is integrated with the Windows operating system. The product will be at the center of a Justice Department inquiry a few weeks later.

OCT. 6 Gates tells Gartner Group Symposium audience that Justice Department antitrust scrutiny has forced the company to rethink its acquisitions strategy and that Microsoft will now buy only smaller companies or invest in larger ones.

OCT. 20. The Justice Department and Attorney General Janet Reno ask a federal court to fine Microsoft $1 million per day for marketing its browser unfairly and allegedly violating the 1995 consent decree.

NOV. 4. Sen. Hatch, now chairman of the Senate Judiciary Committee, holds hearings to explore anticompetitive tactics in the software industry.

NOV. 13 - 14. Ralph Nader sponsors a conference to discuss Microsoft's business practices after blasting the company for being anticompetitive; Sun, Netscape and crusading antitrust, anti-Microsoft attorney Gary Reback agree to attend. Brad Chase, a Microsoft vice president, says the company will not participate in the conference, which he calls "an inquisition of Microsoft." But he adds that Microsoft will "probably have someone watch" the proceedings.

NOV. 16. Gates speaks at Comdex in Las Vegas.

Sources include Microsoft documents, reports filed in Congress, the Federal Election Commission, Overdrive by James Wallace and press reports, including some from Computerworld.

Catch-up on the HILL

Move over, Philip Morris. The computer industry wants a larger chunk of the lobbying turf on Capitol Hill.

Sure, high-technology companies aren't in the same league as the real high rollers in the spending arena. Last year, they poured at least $20 million into in-house lobbyists and outside firms to work the trenches.

Compared with the money other industries — such as tobacco, oil, automotive and insurance — pump into Washington, that's chump change. Philip Morris Cos. could have bought a brand-new Honda Civic for each freshman at Harvard University with the $19.6 million it spent protecting the interests of the tobacco industry last year.

But more and more high-tech companies recognize that lobbying is an essential cost of doing business as their industry's issues increasingly intersect governmental and regulatory areas.

No longer can a high-profile CEO come to town and expect his one-shot splash to be enough to influence Congress and the executive branch. "You have to have a presence here," says U.S. Rep. Anna Eshoo, a Democrat whose district encompasses the heart of the Silicon Valley. "You have to work these issues because there are thousands of people with thousands of issues that will fill the void if you don't."

IBM, the dean of the high-tech lobbying effort, shelled out close to $4.9 million last year and, outpacing that rate, unloaded another $3.2 million during the first half of this year. Sure, technology issues such as electronic commerce and encryption are high on Big Blue's radar screen. But with more than 300,000 employees participating in retirement and health-care plans, standard sorts of business issues also get keen attention, says Chris Caine, vice president of governmental programs at IBM in Armonk, N.Y.

IBM has maintained a Washington governmental affairs office for more than 20 years and employed 30 internal lobbyists over the past 21 months, along with a few outside firms for assistance. By contrast, Microsoft employed only eight internal lobbyists but nine outside firms.

Perhaps the most surprising lobbying force on Capitol Hill, given its relative age and size, is Netscape Communications Corp.

Just 3-1/2 years old, Netscape has about 10% as many employees as Microsoft and 4% as much revenue. Yet the Mountain View, Calif., software maker spent $960,000 on lobbying last year, nearly matching Microsoft's $1.1 million.

Roberta Katz, general counsel for Netscape, attributes her company's relatively heavy lobbying to the experience she and CEO James Barksdale garnered in a heavily regulated industry — Katz and Barksdale formerly worked at McCaw Cellular.

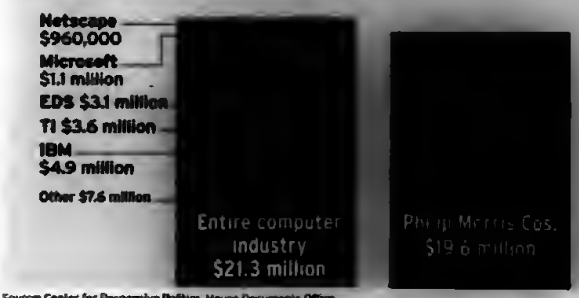
"It was clear to me when I came to Netscape that it was as much about communications as it was about software," Katz says. "And whenever you have issues related to communications, you're going to have issues in Washington."

Netscape has been a leader on encryption issues, which consume the bulk of the company's lobbying time, Katz says.

But records also show that Netscape has been actively lobbying in Washington on antitrust issues that affect the computer industry. — Carol Sliwa and Kim S. Nash

HUFFING AND PUFFING

- The nascent computer industry lobbying effort has a way to go if it wants to match Beltway veterans such as labor, automotive and oil interests.
- Last year, for example, Philip Morris Cos. alone spent almost as much lobbying money as the computer industry.*



Source: Center for Responsive Politics, House Documents Office
*Totals represent only companies that made campaign contributions

FREE! Matrix-UPS™ Video

For your FREE video, simply mail or fax this completed card to APC, or visit us at www.apcc.com

☐ **YES!** I'm interested in learning more about Matrix-UPS™. Please send my FREE video!

☐ **NO,** I'm not interested at this time, but please send a FREE Power Protection Handbook.

Name: _____

Title: _____ Company: _____

Address: _____

_____

City/Town: _____

State: _____ Zip: _____ Country _____

Phone: _____

Brand of UPS used? _____ # _____

Brand of PCs used? _____ # _____

Brand of Servers used? _____ # _____

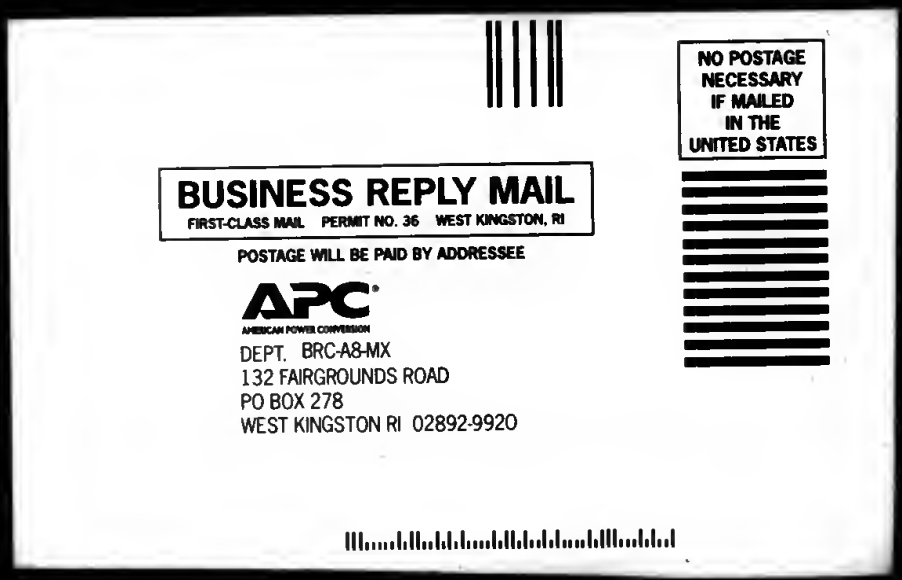
Dept. AS-MM

APC

(888) 290-APCC x7161

Fax: (401) 789-2797

www.apcc.com



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC
AMERICAN POWER CONVERSION

DEPT. BRC-A8-MX
132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9920

At $10,000 per hour, how much downtime can YOU afford?

Award-winning modular reliability

According to Contingency Planning Research, poor power quality can quickly cost you thousands or millions of dollars per hour whether your business is finance, media, retail or transportation. APC's Matrix-UPS™ was built for the 3 to 5 kVA range (between 2250 and 3750 watts), and provides modular, manageable, APC-reliable, high power availability. You get all this plus low operating costs and APC's commitment to your satisfaction.

Matrix-UPS eliminates tough installation, burdensome service contracts, high lifecycle costs and the threat of a single point failure that plague existing midrange UPSs. Matrix-UPS has an innovative modular design which isolates any problems to its self-diagnosing, hot swappable 'module'. No downtime. No service delays. No unnecessary risk. Matrix-UPS modularity also doubles expected battery life and has half the typical 5-year lifecycle cost.

Unlimited runtime suits any application

A Matrix-UPS 5000 with two SmartCells™ can support eight Compaq SystemPro (4000 VA) servers for nearly 15 minutes. Eight SmartCells provide two hours of instantaneous back-up power. You can even quickly and easily add hours of runtime with SmartCell™ XR's, which pack four times the runtime of a typical SmartCell™, and allow you to easily extend system uptime. You'll also find that Matrix-UPS reliability costs less than you would ever imagine, and has never been more affordable.

Take the expert advice of editors and datacenter managers around the globe and avoid downtime altogether with modular Matrix-UPS™ power protection.

Come Visit us at Comdex Booth #L2453

FREE! Matrix Video

For your FREE video, simply mail or fax this completed coupon to APC, or visit us at WWW.apcc.com

☐ **YES!** I'm interested in learning more about Matrix-UPS. Please send my FREE video!

☐ **NO,** I'm not interested at this time, but please send a FREE Power Protection Handbook.

Name: _____

Title: _____ Company: _____

Address: _____

_____

City/Town. _____

State: _____ Zip: _____ Country _____

Phone: _____

Brand of UPS used? _____ #_____

Brand of PCs used? _____ #_____

Brand of Servers used? _____ #_____

Dept. 88-MX

APC

(888) 289-APCC x7161

Fax: (401) 788-2797 • www.apcc.com

©1997 APC. All Trademarks are the property of their owners. MXDSEF • (800)347-FAXX PowerFax • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

IT Careers

ILLUSTRATIONS BY SCOTT MATTHEWS

OUTRAGEOUS RECRUITING

Aggressive recruiters, consultancies and vendors are using offbeat ways to lure IS talent. Their successes offer lessons for corporate IS

BY STEVE ALEXANDER

You think you're an aggressive hiring manager? Listen to this.

A legendary female information systems recruiter in the Detroit area telephoned companies and claimed to be a nun named Sister Mary. She would say there was an emergency and ask to speak to a programmer who worked there but whose name she didn't know. The first technical person who answered the phone got a pitch; if it didn't work, the fraudulent nun would ask if anyone else in the shop might be interested.

Although such forceful tactics still raise eyebrows, they don't raise as many as they used to. "I've had job candidates offer me phone lists from where they work," confides Jeff Jones, a principal at IS recruiting firm AJM Professional Services in Troy, Mich. "I don't turn them down."

But even with competition for IS professionals intensifying, most corporate IS hiring managers still seem unwilling to try some of the unconventional recruiting techniques that appear to be working for hard-hitting IS recruiters

@ COMPUTERWORLD

Executive recruiter Mitchell N. Greene offers advice on how IS professionals can get the most out of a recruiter. Visit our Web site at: www.computerworld.com.

and vendor companies.

Overreliance on daily newspaper advertising — with job fairs a longtime recruiting standby — appears to leave corporate IS lagging in the recruitment wars.

"We do run newspaper ads, but we're starting to recognize they are not getting us the volume of results we need," says Mike Giannini, director of staffing at American Century Investments, a mutual fund company in Kansas City, Mo.

Bill Hickmott agrees.

"People who are good don't have to look for jobs, because jobs come looking for them. And for somebody who is working, there is reduced incentive to pick up a newspaper and read the help-wanted section," says Hickmott, who handles technical professional staffing at Liberty Mutual Information Systems, the Portsmouth, N.H.-based information technology arm of Liberty Mutual Insurance Group in Boston. Using mostly newspaper and radio ads and job fairs, his company requires up to nine weeks to fill IS jobs that range from entry-level development to senior project management.

But there are other ways to recruit: some are expensive, some clever and many outrageous. All require breaking out of the recruiting mold. And, although most are in the early stages, there's at least anecdotal evidence that they work.

SIGN OF THE TIMES

The shortage of IS professionals led The MarMaxx Group in Framingham, Mass., to rent a billboard on Route 9 in Westboro, Mass., to announce the company's IS staffing needs. The company, which is the operating company for clothing and accessories retailers T. J. Maxx and Marshalls, Inc., says it spends between $8,000 and $12,000 per month on the billboard. The first billboard netted two hires; the second billboard is still on display.

"We need to try some things that maybe you wouldn't have done two years ago because you didn't have to," says Bill Robinson, IS project manager of the systems division, which recently relocated from Framingham to Westboro. "Our philosophy is that newspaper ads don't really do it."

JOB LEADS FROM HEAVEN

Aggressive recruiters at outsourcing firms and vendor companies find that unconventional recruiting techniques can sometimes pay off.

When Cypress Semiconductor Corp. in San Jose, Calif., heard about layoffs at nearby competitor Cirrus Logic, Inc. last April 23, it hired an airplane to fly over Cirrus Logic's building towing a banner that said, "Cool jobs at *www.cypress.com*." The action was a calculated risk by a company that typically has 100 IS vacancies at a time and takes up to eight weeks to fill a job.

"I decided to do the airplane because I was looking for a different recruiting technique to attract employees quickly," says Vickie Turner, human resources manager of staffing at Cypress. The flight persuaded 10 Cirrus Logic employees — eight of them technical people — to interview for jobs at Cypress. In the end, none of the technical people was hired. But Turner insists the airplane money was well-spent because of the considerable publicity Cypress got for the stunt, which included flying the banner over Silicon Valley's crowded Interstate Highway 88n.

"I would do it again. We must try nontraditional ways of recruiting because we're getting only a very limited response from newspaper advertising," Turner says.

ON THE OUTSIDE LOOKING IN

Cisco Systems, Inc., a manufacturer of networking equipment in San Jose, uses its World Wide Web page in an unconventional recruiting campaign called "friends@cisco." After filling out a Web page questionnaire, a person curious about Cisco will get a call from a Cisco employee with the same skills who can talk about what it's like to work for the company.

"The whole idea behind this was to come up with an employment campaign to target people who were happy and successful in their current jobs," says Michael McNeal, director of employment at Cisco. "We got folks inside Cisco to volunteer to be 'friends.' If the people they talked to were hired, they got the same employee referral bonus they would have gotten if they had known those people." Currently, Cisco lumps the friends campaign results with its employee-referral campaign and thus doesn't track friends results separately. But McNeal says the friends campaign has been successful.

The Web page recruitment effort was pursued because recruiting campaigns based only on "newspaper ads are not very effective anymore. The reality is that if people are really good at what they do, they are working," McNeal says.

LOVE AT FIRST SIGHT

Dell Computer Corp. in Round Rock, Texas, used videoconferencing to extend its recruiting efforts to Recruit '97, a job fair held in New York in September in connection with the IT Forum show. Dell hired National Career Search, Inc. in Boulder, Colo., which set up PC-based videoconferences at the show. That permitted instant job interviews between IS professionals attending the show and Dell recruiters in Texas.

Wayne Anderson, national sales director at National Career Search, says such videoconferencing speeds up the recruitment process.

"Typically, you've got swarms of people at a job fair, and your company has two or three recruiters just collecting resumes and setting up appointments to follow up. But we were doing screenings at the show, then hooking job candidates up with the correct Dell recruiter in Texas," Anderson says.

Rhonda Gomez, a project specialist for career fairs and recruitment advertising in Dell's staffing department, says videoconferencing "was a way to use a show that we would have kissed off otherwise because we don't get enough people from New York. This was a low-cost alternative to appearing in person, and we're bringing in two people interviewed at the show for second interviews." □

Alexander is a freelance writer in Edina, Minn.

Raiding, offbeat recruiting catching on

As IS job candidates have become harder to find, recruiting techniques that were once considered unethical, such as raiding competitors, are becoming more common.

"There is less bias against raiding than in the past," says Jeff Jones, a principal at IS recruiting firm AJM Professional Services. "Clients regularly say to us, 'We know where you can get these people.' And many times, if we ask a client if they know where we can find a person, they say, 'As a matter of fact, I do.' They don't want to do it but don't mind us doing it."

But nontraditional recruiting has risks: It can be expensive, and there's no guarantee of results. Lisa Pollard, vice president of training and marketing at recruiting firm The Parkson in Torrance, Calif., says she spent $8,000 on a direct-mail campaign that didn't work. And some unconventional recruiting techniques she'd like to try cost too much for her. For instance, buying an advertising banner at Mighty Ducks hockey games at the Anaheim (Calif.) Sports Arena would have cost a minimum of $75,000 for the season.

Instead, Pollard spent $5,000 for a two-month banner ad on America Online that will be seen only by California subscribers.

Dick Stone, an independent IT recruiter in Princeton, N.J., has developed a much lower-cost approach to recruiting: He's turned to "resume mining" on Internet Web pages devoted to IS jobs listings. Many such pages have searchable databases of IS job candidate resumes.

"Technical people are not happy about having to answer ads and send out resumes. Posting to a database is an easy way for them to get their resumes out," Stone says. By mining resume databases, he finds candidates with five to seven years of experience.

Adds Mark Mahler, co-author of "CareerXRoads," a directory for job searching on the Internet, "A good resume miner can make six figures."

But Stone says he doesn't have much competition.

"Other recruiters could do this, but I don't think many are. They don't know how, and they are wedded to putting ads in the newspaper or on the Internet and waiting for responses." As a result, Stone says, resume mining gives him a big advantage over corporate IS recruiters.

"Traditional IT departments are not doing anything unusual when it comes to recruiting. They're so far behind it's pathetic," Stone says.

— Steve Alexander

spearhead

98
CORPORATE
TECHNICAL
RECRUITING
CONFERENCE
COMPUTERWORLD

8-9204

Find
training
now.
careeragent.computerworld.com
COMPUTERWORLD
career@gen

Careers
http://careers.computerworld.com

Oracle Database Administrator: Maintain and administer multiple Oracle V7 databases on Sun Solaris servers. Install and upgrade the Oracle servers and application tools on Solaris servers and client machines. Allocate system storage and plan future storage requirements for the database system. Create primary database storage structures, primary objects, and indexes. Monitor and modify the database structure using Platinum and Adhawk monitoring tools to improve performance and maintain database integrity. Plan and perform database backup. Install, upgrade and maintain customer support systems on Sun Solaris servers. Write scripts in Structured Query Language (SQL), SQLPLUS, and PL/SQL. Manage SUN Sparc20 servers including creating users, installing software and writing UNIX shell scripts and writing scripts to link various databases. Requirements: Master of Science degree in Computer Science or Information Systems and six months experience in the position offered or six months experience as a Systems Programmer which must include experience in Oracle database administration and programming in SQL. M-F, 8:30-5:00, $50,000.00/ year. Apply at the nearest Job Service office, or submit resume with Social Security number to the Job Service, 742-F East Chatham Street, Cary, NC 27511, JO #NC5770470 and DOT code 039-182-010. Ad paid by an equal opportunity employer

SYSTEMS PROGRAMMER II. One full time Systems Programmer II position available in Beaverton, OR. Duties: Conduct internet/intranet system technology research, including web server, OSI (Open System Interchange) open system model, TCP/IP (Transmission Control Protocol/Internet Protocol) and UDP (User Datagram Protocol), CGI/API (Common Gateway Interface/ Application Programming Interface) for industrial application. Study UNIX, VMS, Windows NT hardware & software system development. Develop advanced integration solutions for systems, communicate project schedule Plan, design, acquire, implement & manage complex, state-of-the-art computer info systems using extensive knowledge of client/server model, system architecture, & operating systems (e.g., UNIX/Solaris/AIX VMS & Windows NT/95) Interface hardware and software with open TCP/IP networks, integrate distributed systems, establish disaster recovery processes using utility software inter/intranet & global 24x7 enterprise system operation. Investigate complex system problems & implement research findings for problem solutions. BS in computer science, info. systems, or business admin. & 2 years experience as a system programmer or programmer analyst, or MS & 1 year experience (1 year graduate coursework, graduate work or work experience qualifies as 1 year work experience) Salary $48,000/yr & potential for bonus earnings. Interviews in Beaverton, OR. Resume &/or cover letter must reflect every listed requirement or it will be rejected. Applicant must have legal authority to permanently work in the US. Send this ad & your resume to Employment Department, Attn: Job Order No. 5551592, 675 Union St., NE Room 201, Salem, OR 97311

IF INFORMATION TECHNOLOGY IS YOUR SPECIALTY,

GET READY FOR THE CAREER ADVENTURE OF A LIFETIME!

If you're ready to take your career to the next level, there's no better place to be than here at Price Waterhouse Management Consulting. **We're honored to be named #1 in *Computerworld*'s 1997 "100 Best Places to Work." We are just as proud to be named one of the "100 Best Companies for Working Mothers" by *Working Mother* magazine.** These distinctions reflect our commitment to creating a world-class environment featuring all the resources — award-winning training, innovative career advancement options and highly attractive compensation — to support your success.

Our explosive growth has created excellent opportunities for professionals to take an active role in the kind of high-profile, high-impact projects that are transforming business the world over. We seek team members around the globe with hands-on experience in any of the following areas:

- **PeopleSoft, Oracle or SAP Package Implementation**
- **Other Financial, HR or Supply Chain Packages — We will train in the above**
- **Data Warehousing/Data Modeling**
- **Client/Server Development**
- **Electronic Commerce**
- **System Administration**
- **Enterprise Architects, preferably three-tier**
- **COBOL, SQL — We will train on ABAP and PeopleTools**

Travel will be essential to your success. If you'd like to work alongside the best people in the business within an organization recognized for its leadership, send your resume — indicating location preference — to: **Price Waterhouse, Management Consulting, Dept. LC/CW1117, Fax: 1-800-493-7828 or e-mail: PW_JOBS@notes.pw.com** (no file attachments, please).

For additional information on our Firm, visit our Web site: **http://www.pw.com/mcs**

We are proud to be an equal opportunity employer.

Best Places to Work

Price Waterhouse
Mind & Muscle™

© 1997 Price Waterhouse LLP

UIT is committed to your success...

Partner with a dynamic nationwide consulting firm that can offer you challenging work and an opportunity to broaden your expertise. Focus on the cellular and telephony carrier and end user ordering, provisioning, billing, message processing, networking, testing, and quality assurance. For 10 successful years, we have empowered our employees in the decision making process, problem resolution, and the exploration of new ideas. UIT has opportunities for experienced:

- Testers, Func./Tech.
- SMEs
- Project Managers
- Programmers
- DBAs
- Systems Administrators
- Message Processing SMEs
- Switch Engineers (SESS & DMS)
- Circuit Design Engineers
- Systems Analysts
- Business Analysts
- Quality Assurance
- Data Analysts
- Technical Writers
- Network Engineers
- Trainers
- M&P Writers

UIT provides competitive compensation & benefits. Mail, FAX (847-706-1327) or E-mail: uit1@concentric.net resume to: HR Staffing or call (800-624-8434) UNITED INFORMATION TECHNOLOGIES, 1051 Perimeter Drive, Suite 550, Schaumburg, IL 60173 EOE www.uitonline.com

UNITED INFORMATION TECHNOLOGIES GROUP
UIT

Integrated Systems Professionals

A Fast-Growing National Consultancy Offers Exciting Opportunities For Top Quality Professionals.

Project Managers
Team Leaders/Consultants

- Long-Term Career Opportunities
- Short-Term And Long-Term Contract Opportunities

Expertise in all SAP R/3 Modules Base and ABAP
Oracle •PeopleSoft •Baan

Performance-Based Compensation provides exciting opportunities for experienced professionals. (To $250K OR $150 per hour for experienced SAP experts)

Please fax resumes to 818-225-6740 or visit us at http://www.ipr.com

IPR INC.

Run with the leader. Be part of a winning team!

Business Management Data, Inc. provides IT solutions to Fortune 500 clients. Based in Irvine, CA. BMD has openings for software professionals nationwide including Los Angeles-CA, Dallas-TX, Charlotte-NC, Chicago-IL, Jacksonville-FL, Tampa-FL, Detroit-MI, Salt Lake City-UT, and Newark-NJ.

Software Engineer
Develop and test computer applications. Conduct feasibility studies. BS degree, 1-2 yrs. exp.

Senior Software Engineer
Design software systems. Plan, schedule and direct preparation of programs. BS degree, 2-3 yrs exp, or Masters degree with 1 yr exp.

Project Manager
Direct and coordinate efforts of software engineers to develop, test, install and modify programs. Monitor goals and maintain client contact. BS or MS degree, 3-5 yrs. exp.

Above job openings are for client/server (C/C++ or Oracle), midrange (RPG, C/400), and mainframe (Cobol, CICS) systems. BMD offers competitive salaries with full benefits.

Please mail, fax or e-mail you resume and salary history to:

BMD/CW# 111797
125 Pacifica, Suite 220
Irvine, CA 92618
Fax: (714) 789-0183
E-mail: resume@bmdinc.com
http://www.bmdinc.com

Immediate. Around-the-Clock. Timely. The unparalleled range of information products and services we provide our global clientele has made us the world's foremost information leader. Considering we're the offspring of a merger between TRW Information Systems & Services, based in Orange, CA and CCN, based in the UK, our new generation of leadership is no surprise. It's time to experience Experian.

Building on a lifetime of expertise.

Programmers (All levels)
- IBM/MVS, CICS with COBOL, C, or Assembler
- C; UNIX, RDBMS

Database Administrators, Designers and Developers
- DB2 or Oracle

Integration and Test
- IBM/MVS, CICS, TSO, ISPF, DB2

Technical Project Managers
- Credit or financial service industries

Technical Support
- PC: LAN, WAN, Inter/Intranet, MS Windows, NT, Lotus Notes
- IBM: JCL, TSO, ISPF, VSAM

All positions are currently available at our Allen, TX and Orange, CA locations. For more information on these and other opportunities, please visit our employment page on the web at: **www.experian.com/corporate/employment.html**

We offer competitive salaries and outstanding benefits in a challenging, varied and fast-paced work environment. For consideration, please mail your resume with salary history and requirements to: Experian, Attn: EF/CW, 505 City Parkway West, Orange, CA 92868; fax: (714) 385-5444, e-mail: experian.hr@experian.com. EOE

experian
formerly TRW Information Systems & Services

INTERNATIONAL IT ASSIGNMENTS

DELUXE ELECTRONIC PAYMENT SYSTEMS is a global leader. Our technologies make millions of dollars in worldwide commerce possible. And right now, we're hiring IT professionals who are ready to travel the financial world to represent us.

You'll train for several months in Milwaukee. After you've mastered our leading-edge technologies, we'll send you on assignments that will take you to London, Sydney, or other international locations where our services and systems are utilized. Join us in one of the following positions and impact our expanding universe.

- **Tandem Applications Developers**
  Requires experience with Pathway, COBOL or TAL.
- **IBM Applications Developers**
  Requires experience with COBOL, DB2 and Assembler.
- **Client Server Developers**
  C++, Delphi, Object Oriented Design
- **EFT experience on any platform is helpful**

If you have the technical abilities we're looking for—and the entrepreneurial approach to make things happen—we can make you a generous offer that includes an attractive salary, outstanding benefits and exceptional growth potential. Send your resume and salary requirements to: **Deluxe Electronic Payment Systems, Inc., 400 West Deluxe Parkway, Milwaukee, WI 53212-0536; Fax: (414) 341-5098, e-mail: fred_w_worrell@deluxedata.com** An equal opportunity employer. Pre-employment Drug Screening Required.

DELUXE

DELUXE ELECTRONIC PAYMENT SYSTEMS, INC.

Multinational innovation and an exploding revenue base have further broadened the horizon at IMR, a cutting-edge transitional outsourcing organization with enormous global appeal

- Competitive compensation
- Generous benefits
- Stock options (NASDAQ: IMRS)
- Long-service awards
- Potential for international assignments
- Fast-growing global team
- Fortune 200 clientele

It's time you broadened your outlook to include IMR, a software services pacesetter with a huge vision for your tomorrow! Respond with resume to Donna Kapinos at: **INFORMATION MANAGEMENT RESOURCES, INC., 26750 U.S. Highway 19N, Clearwater, FL 33761. Fax 813-791-9152. E-mail: donna@imr.com. EOE.**

IMMEDIATE & BASE OPPORTUNITIES

- Technical Project Managers/Leaders
- Technical Specialists
- Systems Analysts
- Systems Architects
- Programmer/Analysts
- Programmers

All opportunities require multi-platform experience in one or more of the following: MAINFRAME: IBM-MF, DB2, IMS-DB/DC, COBOL, COBOL II, CICS, APS, IDMS, ADS/O, ADABAS/NATURAL, PL/1, Assembler, and ADW; CLIENT/SERVER/PC TECHNOLOGY: C++, C, UNIX, ORACLE, ORACLE 2000, SYBASE, PowerBuilder, Windows-NT, Visual Basic, IEF 5.3, OOD, GUI, and SQL

Information Management Resources

• Clearwater (headquarters) • Boston • Rochester • • Dallas • Chicago • Belfast • London • Sydney • • Bangalore & Mumbai, India •

Consulting Associate 3 to analyze, design, develop & implement computer systems for financials, manufacturing & distribution. Responsibilities include analyzing customer's requirements, preparing design specifications, developing, testing, implementing, installing maintaining & supporting systems & providing production support. Will design & develop UNIX systems using SAP/R3 certification & BaaN Triton. Will work with computer environments including VAX/VMS, UNIX & DOS, relational databases including Oracle & Informix, COBOL, C, C++ & PC tools (spreadsheets, databases & word processing). Requirements are a Master's degree in Mechanical Engineering or Computer Science with 2 years experience in job offered or 2 years experience as Sales Engineer. 40 hr work week: 8:15 am to 5:00 pm, M-F. Salary: $83,252.80 per yr. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, Illinois 60605. Attention: ARLENE THROWER, Reference # V-IL 18262-T. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER. Must have proof of legal authority to work permanently in the U.S.

COMPUTER/IT

We Speak your Language

From professional challenges to compensation and relocation benefits...Raytheon Engineers & Constructors is speaking to everything your career needs! Our Automated Systems Division offers systems analysis and design and systems integration to manufacturing clients worldwide. We are currently seeking progressive professionals for our internal and external consulting business.

Consider the following opportunities with one of the most powerful firms in the industry worldwide. *Opportunities exist in Birmingham, Philadelphia, Cambridge, Houston, Denver, Pittsburgh & Chicago for:*

- **SOFTWARE SYSTEMS ANALYSTS**
- **SYSTEMS INTEGRATORS**
- **SOFTWARE SYSTEMS PROGRAMMERS**
- **MANUFACTURING APPLICATION SYSTEMS PROGRAMMERS/ANALYSTS**

EXPERIENCED IN:
- Manufacturing Systems Applications
- UNIX Operating Systems
- SCADA Software Applications
- MES Software Packages
- Object Oriented Design Technology
- Supervisory Computer Systems
- ORACLE
- Powerbuilder/C++/Sybase/Informix

If creativity, teamwork and success are more than just words to you, please send your resume indicating location preference to: **Raytheon Engineers & Constructors, Inc., Attn: Don Hayslett, Human Resources - Dept. ASD, P.O. Box 101, Birmingham, AL 35201; or FAX: (205) 995-7684, or e-mail: raytheon@rgadv.com.**

Raytheon Engineers & Constructors

Raytheon is an Equal Opportunity Employer.

C++ Sybase PowerBuilder OOD Oracle C+
racle Unix Informix C++ Sybase PowerB
owerBuilder OOD Oracle Informix Unix

INTERNET/eCOMMERCE DEVELOPERS

Oracle's "Advanced Technology Solutions" group, a highly skilled team of Internet/eCommerce Solutions professionals, is searching the world over for strong Internet Development expertise. ATS is poised to double in size over the next several months and we need your help to get there!

ATS has immediate openings in **Washington, D.C., California and throughout the U.S.** If you have the skill sets to develop tomorrow's technology in today's world, we want to talk with you. Flexibility to travel is required.

For consideration, please forward your resume to: **Oracle Corporation, Attn: Bob Cope, 8614 Westwood Center Dr., Suite 1000, Vienna, VA 22182. FAX (703) 917-4506. Phone (703) 917-4598. E-mail: rcope@us.oracle.com.**

All responses will be confidential.

Equal talent will always get equal opportunity.

ORACLE®

Enabling the Information Age™

PRINCIPAL SOFTWARE ENGINEER - PRINCIPAL SYSTEM DEVELOPMENT: Direct and coordinate engineers and technicians to develop new techniques and procedures to improve the fidelity of control loading and motion systems utilizing advanced digital control theory techniques for non-linear dynamic systems and digital signal processing related to harmonic and spectral analysis. Evaluate new computer products ranging from processor boards to interface and input/output boards. Develop software for real-time programming of open computer architectures in the areas of executives, exception handling, device drivers, and interprocess communication. Implement control loading and motion simulation model software and integrate the software with that of the other engineering disciplines such as engines, systems, aerodynamics navigation and visual systems. Confer with flight test group to ensure proper instrumentation of the data acquisition system on the test aircraft related to control loading and motion systems. Prepare flight test plans related to control loading and motion systems. Analyze flight test and aircraft data for proper system modeling. Requires a Master's degree in Electrical Engineering and five years experience in job offered or five years related flight simulation experience involving the development of control loading and motion systems. Or, will consider a Ph.D in Electrical Engineering and two years related experience in flight simulation involving the development of control loading and motion systems in lieu of Master's degree and five years experience. 40 hour work week. $53,000 per year. Apply at the Oklahoma State Employment Service Office, 11654-A E 21st St. Tulsa, Oklahoma 74129 (ID#7209) Phone. (918) 437-4473. Job Order #294208. Ad Paid by an Equal Opportunity Employer

DMR TRECOM, one of the largest IT consulting organizations, is setting the standard for challenging projects with leading Fortune 200 companies from coast to coast. As a full-time employee with DMR TRECOM, you'll benefit from our promote-from-within policy that rewards your skills and work performance. In addition, the depth and diversity of our service offerings allows you more choices and opportunities for professional development.

Our commitment to your advancement is backed by planned training opportunities to gain hands-on experience. We encourage continued learning and skill enhancement through both computer-based and classroom in-house training programs, as well as a generous tuition reimbursement policy.

There's Technical Challenge You'll Find DMR TRECOM With A Solution.

- COBOL, CICS, DB2 or IMS Programmers
- COBOL, JCL, MVS Production Support
- Sr. Technical Recruiter
- Internet Recruiter
- Visual Basic (4.0-5.0) Developers
- PowerBuilder Developers
- Business Practice Managers
- Internet Developers
- Software Testers
- JAVA, HTML, ActiveX Developers
- C++, UNIX, OO Developers
- DB2, ORACLE, SYBASE Developers
- DBAs
- Internet Architect Project Managers
- Data Warehousing Project Managers

DMR TRECOM
An Amdahl Company

The Results People

For more detailed information visit

www.dmrtrecom.com

USA • Canada • Europe • Asia Pacific

ATTENTION CONTRACT & PERM

Up to $135.00 per hour. Any and all skills are of interest to us with immediate positions for the following:

- QEAC MSA "E" series Financials, HR/PR
- MAD "M" series Financials, HR/PR
- SMARTSTREAM client server, all modules
- PEOPLESOFT - Financials, HR/PR
- MRP/COBOL - AMAPS 8 + OREGON
- Internet/Network Bus Sys Mgr
- MS Excel/VB Finance Apps Integration
- Adabas/Natural
- PowerBuilder, C++, Bybase
- C++
- Oracle Apps P/A's
- SPICS MRP
- AS/400 COBOL Sys Programmer
- COBOL Yr 2000

send resume/call:

EH-DATA CORPORATION
P.O. 2949
SANFORD, FL 32772-2949
Ph. 407-323-0033
Fax. 407-323-0685
email: info@is-careers.com

For more comprehensive details and locations, visit our web site

http://www.is-careers.com

Systems Analyst

Mercy Healthcare Arizona is committed to being Arizona's first choice for healthcare. We are an integrated healthcare delivery system providing comprehensive preventative care, acute care, primary care and after care.

Our progressive IS department in Phoenix features a multiplatform environment supporting mainframe, midrange and desktop systems (MVS/ESA, UNIX, VMS, OS/400, Token Ring, Novell, NT, CISCO, SNA, TCP/IP and LAN/WAN). To support our expanded activities, we're interested in highly motivated individuals with strong interpersonal and written/verbal communication skills and the ability to function individually and within a team!

The primary responsibilities of this position include the **planning, development, documentation, implementation and maintenance of computer applications.** Qualifications include a Bachelor's degree and 3+ years experience in information systems, preferably with SMS Invision and/or Emtek systems.

Beyond our quality reputation for excellence in healthcare and medical research, our great southwestern location provides plenty of opportunities to bask in the sunshine, bike and hike the mountain trails, play golf or tennis, or enjoy the many cultural and sporting events that make Phoenix one of the most resort-like places to live in the country.

Please send resumes to: Mercy Healthcare Arizona, Human Resources, 222 W. Thomas Road, Suite 213, Phoenix, AZ 85013. Fax: 602-406-7155. Jobline: 602-406-3035
For more information on our network or to respond on-line, please see our site at: http://www.careermosaic.com/cm/mercy/

We support a drug free environment. EOE

It All Comes Together with Tivoli

At Tivoli Systems, we incorporate all of the elements that allow you to be your best, such as ambition, honesty, intelligence and talent. And let's not forget fun! As the leading provider of network computing management software, our innovative approach makes us the most widely respected and highly sought after provider in the marketplace. Tivoli can offer you the opportunity to work with state-of-the-art programming techniques and tools in a team-oriented and creative development environment. If you're looking for that perfect fit, consider joining Tivoli, where it all comes together. Extraordinary growth has created the following opportunities at our Austin, TX facility:

DIRECTOR OF APPLICATION SYSTEMS
MANAGER OF WEB LOTUS NOTES APPLICATIONS
ORACLE SENIOR ANALYST

Now is the perfect time to join Tivoli Systems. Please forward your resume to Samantha Silver, TIVOLI SYSTEMS, Inc., 9442 Capital of Texas Hwy. North, Suite 500, Austin, TX 78759. Fax: 512-436-1329. Ph: 512-436-8404. E-mail: samantha_silver@tivoli.com
An equal opportunity employer, we value the diversity of our workplace.

For additional opportunities, visit our website at www.tivoli.com

98

ORLANDO FLORIDA
May 17-20, 1998
Marriott's Orlando World Center Resort
1-800-488-9204

SPL WorldGroup

SPL WorldGroup is "an international builder of business solutions. We are currently looking for individuals with Natural/DB2, Natural Oracle, Natural/Construct, Natural/Adabas, Visual Basic, Smalltalk, C++, Java, Cobol, OO skills to work in our development centers in California, New Jersey and Chicago as:

Programmer/Analysts
Software Engineers
Systems Analysts
Project Leaders
Designers • Architects

Email, fax or mail your resume to: Jos Barnett, Fax: 415-541-0224, E-mail: Jos_Barnett@splwg.com, www.splworldgroup.com. EOE

NEW SAP BASIS OPPORTUNITIES
$110,000 - $130,000

Consulting organization of major computer company is seeking BASIS Consultants with 1+ years experience. Contract or permanent positions. Company will invest over $50K in advanced R/3 training. Up to $25K hiring bonus. Openings in major U.S. cities and Europe.

$110 - $130,000 compensation
Contract or Permanent

FAX RESUME TO:
Technology Group
1-800-818-6824
empbas@tec-group.com

SAP

We are seeking Professionals to join our SAP Consulting Staff. All modules, ABAP & BASIS. Contract & Permanent positions available nationwide.

Pacific NetSoft

Attn: Lewis Cramer
Tel: 800-797-7224
Fax: 408-369-9095
lcramer@pacificnetsoft.com

At DST, Data Is Our Business.

DST Systems, Inc., located in Kansas City, Mo., provides information processing services for the nation's financial industries.

DST has immediate openings for the following positions:

DATA ANALYST: This individual will be responsible for analyzing business data requirements, performing logical and physical data modeling and normalization; create, maintain and document data structure definitions.

Requirements include: 2+ years experience in DATA MODELING, including entity/relationship diagramming. Strong data analysis/data administration experience, experience with structured development techniques, use of CASE tools (KEY, Bachman).

DATABASE ADMINISTRATOR: This individual will be responsible for the design and implementation of physical databases for the DST business units, developing database backup, recovery and reorganization procedures and monitoring and tuning the database environment.

Requirements include: 2+ years experience as a Database Administrator using DB2 or DATACOM/DB in an MVS environment. Knowledge of BMC tools, KEY, COBOL and TSO/ISPF is desirable. A background in DB2 Client Server is helpful. Good technical and communication skills are required.

Qualified candidates should reply to:

DST Systems, Inc.
Attn: KGDA
333 W. 11th Street, 3rd Floor
Kansas City, MO 64105
Fax: (816) 435-8618
E-mail: kmgittemeier@dst.com

DST DST SYSTEMS INC.

Looking for a high tech job?

Been there.
(That's why we created DICE.)

www.dice.com

DATA PROCESSING
INDEPENDENT
CONSULTANTS
EXCHANGE

CONTRACTORS

www.winterwyman.com

- Powerbuilder/Sybase/Oracle Developers
- Messaging: cc:Mail, MS Exchange, MS Mail
- SAS Programmers/Oracle Financials
- Lotus Notes Developers/Administrators
- Visual Basic/Access/Excel
- HTML/Java/JavaScript Developers
- Integration Engineer (LAN/WAN)
- Systems Architect, Routers, ATM, Ethernet, Network Management
- Mainframe (Cobol, CICS, DB2, JCL)
- UNIX System Administrators (Sun, DEC, HP)
- Progress Programmers
- RDB DBA, VAX, DCL
- NT/Win '95/MS Office Support
- Novell/Notes Admin.
- Helpdesk Manager

- VC++, MFC, OLE, NT, SQL Server
- C++, Unix Sybase
- C, Shell Scripts, UNIX
- DBA, MS SQL Server, Oracle, Sybase, NT
- VC++, MFC, NT, TCP/IP
- Java Developers
- VC++, NT, German/French/Italian/Spanish Fluent Speakers
- Localization Engineer
- European & Asian Translators/QA
- QA: Silk, QA Partner Experience
- QA: Win. Web Experience, Automation a plus
- QA: UNIX, Routers, X.25
- QA: Several Windows Manual Test positions
- QA: UK, Hebrew, Arabic, Japanese, Indian Fluent Speaking

Winter, Wyman Contract Services

BOSTON AND NATIONAL CONTRACTS:
Contact: Donna Byrne 617-890-7007
Outside MA: 800-890-7002 Fax: 617-890-4433
400-1 Totten Pond Road, Dept. CW, Waltham, MA 02154-2000
Email: contract@winterwyman-contract.com

ATLANTA:
Contact: Lang Norris
770-933-1525 Fax: 770-933-1526
1100 Circle 75 Pkwy., Ste. 800 Dept. CW, Atlanta, GA 30339
Email: atlanta@winterwyman.com

DATABASE EXPERTS

Sr. DB Expert to $90k + bonus
Dynamic, multi-nat'l corp
Will lead corp database planning
Requires exp. in multiple RDBMS

DBA/Tech Support to $80k
Strong performance tuning
Will support large databases

S/W Development to $80+ stock
C/C++/database development
skills for to tech software vendors

DB Specialists $60 - 120+
Host of opportunities for database & C/S project mgr's/developers.
Large & small companies, many industries.

HAMILTON
PO Box 366 Westberley, NY 12481
914-679-4050 Fax: 914-679-8704
cwad@hamiltontech.com
http://www.hamiltontech.com

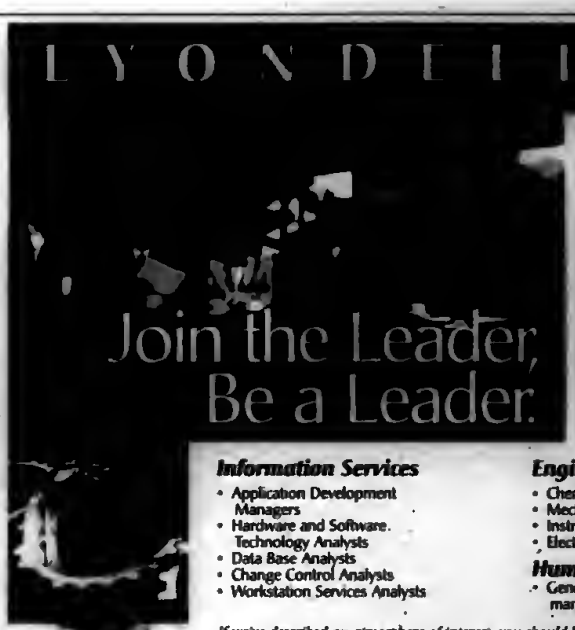
Find training now.

careeragent.com

COMPUTERWORLD
career@gent

TECHNICAL CONSULTANT: Under the direction of technical services manager, responsible for complete implementation and maintenance of a PC LAN environment including the initial configuration and setup of the Network (Ethernet and Token Ring), Netware, operating system (DOS, UNIX, and Windows), and user applications. Extensive experience with security on a LAN is mandatory. Responsible for creating user profiles and automated functions to create the user environment and Windows interface in a Novell environment. Strong working knowledge of Desktop publishing, Notes products, Microsoft products, Presentation Manager, Real World, spreadsheets, and word processing as well as BASIC, COBOL, C, C++, Pascal and Turbo Pascal. Basic hardware maintenance, good writing skills, and extensive experience with security on a LAN, managing groups, as well as project leadership required. Bachelors of Science degree required specializing in computer sciences. $36,500/yr., 40 hours/week. Qualified U.S. workers are encouraged to apply to this/these position(s). Fax resumes to Mike Brooks, Jobs, Employment and Training Services (JETS), 201 E. Washington Avenue, Rm. 211X, Madison, WI 53707. Refer to case # 950002 on resume.

VAX/VMS Programmer/Analyst Needed: 40 hrs. p/wk, 8:30-5:00 M-Fri. $40,000 p/y. Duties: Design and implements database applications on VAX/VMS system. Defines project technical specifications. Programs in COBOL and DCL to create applications, parametric data conversion and systems migration. Programs in RDB to manipulate data in databases. Produces screen and forms design. Conducts training sessions with users at technical and business level. Requires: Bachelors in Electrical Engineering or C. Sci. and 2 years in the job offered. Must have proof of legal authority to work permanently in the U.S. Send Resumes to: IDES, 401 S. State St., 7 North, Chicago, IL 60605. Attn: Brenda Kelly, Field V-IL 19849-K. An Employer Paid Ad. No Calls - Send 2 Copies of both resume & cover letter.



Lyondell, one of the largest producers of petrochemicals and polymers in the world, has been selected as one of the 100 best companies to work for in America and one of the 100 best managed companies in the world. That all adds up to great opportunities.

Lyondell seeks people who want to make a difference, who are eager to take responsibility, and tackle challenging new assignments. Lyondell has grown significantly through internal development and joint ventures. Now we need enterprising professionals to take charge today and lead the corporation to the future.

We invest in an environment that nurtures developing leaders – leaders who are the benefactors of a lean organization where a hands-on philosophy and a wider span of responsibility are routine.

If you are a degreed professional with at least 5+ years relevant experience, are innovative, creative, have excellent communication and interpersonal skills, a good analytical mind and an entrepreneurial spirit, we invite you to join us in one of the following opportunities.

Information Services
- Application Development Managers
- Hardware and Software Technology Analysts
- Data Base Analysts
- Change Control Analysts
- Workstation Services Analysts

Engineering
- Chemical Engineers
- Mechanical Engineers
- Instrument Engineers
- Electrical Engineers

Human Resources
- Generalists with experience in a manufacturing environment

Accounting
- Petrochemical Inventory Analyst (SAP a plus)

Business Analysts
- Information Systems
- Customer Services, supply chain
- SAP Projects
- Human Resources

If we've described an atmosphere of interest, you should know that Lyondell provides a premium compensation and benefits program that is among the best in the nation. If you wish to apply your talent, commitment and vision to the Lyondell challenge, call now,

1-800-490-4300

24 hours a day, 7 days a week

in confidence, to discuss one of the above opportunities. Or contact us via our on-line inquiry form:

www.resjobs.com/lyondell

We are an equal opportunity employer M/F/D/V.

Lyondell

Sometimes, all you need is another gig.

Meet 1-on-1 with Technical Recruiters offering 100s of technology positions for I.T., Telecommunication, Engineering & Semiconductor professionals!

Dallas

Nov. 17-18, 1997 Jan. 19-20, 1998

These Career Fairs are FREE! Bring plenty of Resumes!
For more information & a list of participating companies, see our web site at www.cfcjobs.com today!

If unable to attend, you may send your resume to:
Career Fair Coordinators ● Post Office Box 1450 ● Dept. CW11 ● Coppell, TX 75019
FX: 972-462-9044 ● EMAIL: resumes@cfcjobs.com
An EEO / Affirmative Action Recruiting Event

SDS

An Information Technology Firm

Permanent and contract positions are currently available throughout the Southeast. Any and all skills are of interest to us:

• CLIENT SERVER • MAINFRAME • MIDRANGE

Excellent compensation and benefits, training, relo. assistance, and 401-K. Call or write today! Software Data Services, Inc., 4600 Park Road, Suite 109, Charlotte, NC 28209.

Programmer, Databases: Programs, designs, develops, modifies, and implements various relational database software and software applications for implementation in a Microsoft Access database system. Uses various tools such as SQL to design and implement appropriate tables and indexes to support and users applications in a multiple department environment. Uses Visual Basic and Visual C++ to create customized graphic user interfaces for various database applications. Requires two years experience in the job to be performed. Please send resume to: Fran Mattivi, Metro Provider Service Corporation, 200 West Adams, Suite 2800, Chicago, Illinois 60606. No Calls.

The [redacted] Group, a World Class International Aerospace Company is seeking candidates for the following Tulsa based opportunity:

MANAGER INFORMATION SYSTEMS

Position is responsible for directing and managing overall information systems in support of day-to-day operations and long range strategic planning in order that computer resources are available to customers when needed, data integrity is maintained and the Information Systems Department for the Rendeen Group Manufacturing Division operates smoothly and efficiently. Will be responsible for developing information systems policies and standards that promote a sound systems management and development environment.

Requires a Bachelor's degree in Business or Management of Information Systems with five (5) years experience in a related computer and information system areas or a combination of equivalent education and experience. Further requirements are:

- Strong working knowledge of information processing equipment and systems development management and implementation.
- Recent CA-MANMAN/DEC and DEC VAX/Open VMS experience or equivalent experience, with a minimum of three (3) years experience in systems implementation, training and management preferred, but not required.

If you are interested in this opportunity, please send a resume to:

The [redacted] Group
P.O. Box [redacted]
Tulsa, OK 74101
Fax: (918) [redacted]
Job Line (918) [redacted]

THE NORDAM GROUP

Equal Opportunity Employer M/F/D/V

PEOPLESOFT

VHA is a nationwide network of leading community-owned health care organizations and physicians. Through shared knowledge and commitment, we build strength to improve community health and achieve market success. We are currently seeking a qualified individual for our corporate headquarters located in Dallas, Texas.

MANAGEMENT SYSTEMS MANAGER

In this position, you will plan, develop, test, and implement new releases to meet changing system requirements. Serves as a functional/technical team leader. Oversees the maintenance of programs/applications necessary to support HR products/services, and develops short and long-range HRMS strategic plans for effective utilization of HR services. Recommends hardware/software to support HR objectives; develops/establishes department standards/procedures, and coordinates the work of HRMS staff and consultants; acts as liaison to the MIS department. Ability to design panels and menus utilizing PeopleTools.

Position requires:

- Bachelor's degree
- 5+ years prior experience in a corporate HR department (or consulting role)
- 3+ years experience working in a PeopleSoft environment (i.e. PeopleTools, PeopleCode, SQL/SQR); also requires Benefits Administration Module experience

Excellent benefits package including relocation assistance. Please send resume with salary requirements to: VHA, Attn: Req #HRMS, P.O. Box 140958, Irving, TX 75014-0958 or fax to (972) 830-6953. For information on other available positions call our 24-hour jobline at (972) [redacted]-7777.

VHA

Visit our website: www.vha.com

United to Improve America's Health®

Equal opportunity employer

VHA is a nationwide network of leading community-owned health care organizations and physicians. Through shared knowledge and commitment, we build strength to improve community health and achieve market success. We are currently seeking qualified individuals for our corporate headquarters located in Dallas, Texas.

req #208
ANALYST
In this position, you will develop and document application programs and perform analyst duties in defining systems requirements/external design specifications. Position requires:
- 4+ years experience in a like role
- MVS, DB2, COBOL experience required; knowledgeable of structured programming/code walkthrough techniques

req #772
ANALYST
This position gathers requirements, analyzes, codes, tests documents and implements programs. Knowledgeable of a Data Warehouse/DataMart environment. Must be competent in current database technologies. Position requires:
- Experience with Visual Basic, relational databases, structured programming/code walk through techniques

req #144
ANALYST
This position requires software development in a Windows or Internet/Intranet development environment. Experience using FrontPage 97, Visual InterDev or Visual Basic required. Position requires:
- 3+ years experience as a developer

Please send resume with salary requirements to: VHA, Attn: Req #, P.O. Box 140969, Irving, TX 75014-0969 or fax to (972) 830-6953. For information on other available positions call our 24-hour jobline at (972) 869-6777.

VHA

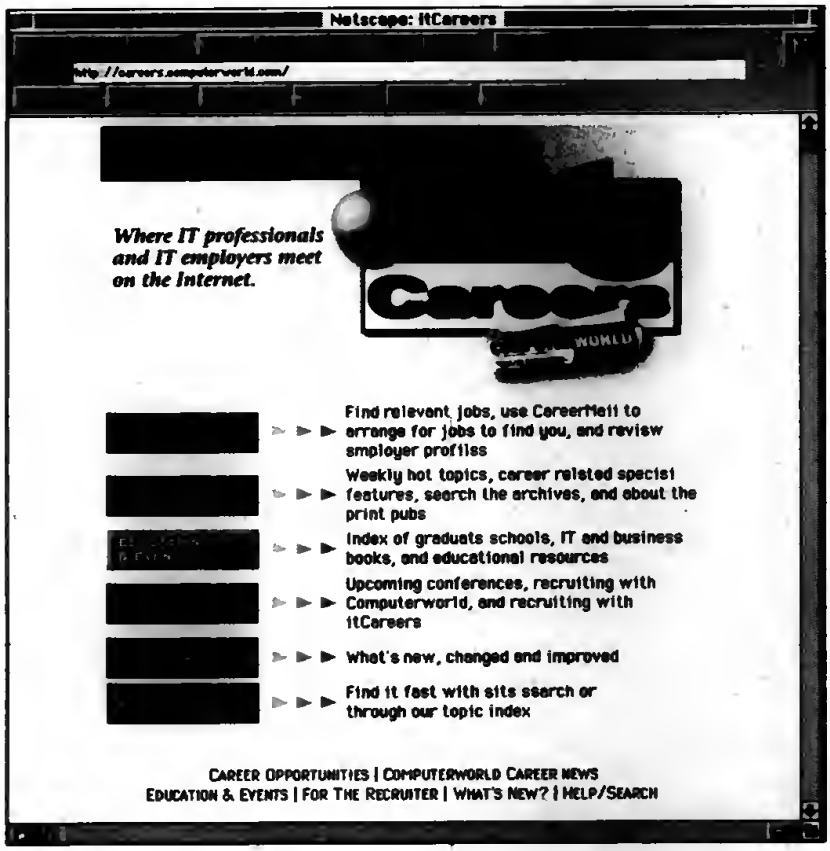
Visit our website: www.vha.com

United to Improve America's Health®

Equal opportunity employer

This Web Site

e-mails you with the career opportunities you want.



itCareers. Where the careers find you.

http://careers.computerworld.com

information systems

Success Is Standard Protocol.

When you work for Sprint, you're working for a company that's continually breaking new ground and setting new standards. Our continued growth has created several opportunities supporting engineering and operational support applications at our Kansas City Corporate Headquarters:

Technical Leader

Multiple positions available for candidates possessing strong project management, development methodology and communication skills. Positions will lead mainframe COBOL/IMS/DB2/CICS team or mid-range UNIX, C, Informix, Client/Server team.

One of the positions will provide project management and technical leadership on Sprint Health Care projects. These positions require excellent project management and communication (oral and written) skills; 8-10+ years experience developing systems on mid-range/mainframe platforms, strong UNIX, Object Oriented, Informix, TCP/IP and networking skills, and working knowledge of JAVA, C/C++ and PowerBuilder. **Job Code: TL**

Object-Oriented Developer

Multiple positions available for qualified candidates that have 1-3+ years Object-Oriented full lifecycle development experience using IBM VisualAge, Smalltalk, Envy, WindowBuilder Pro, UNIX and Informix. **Job Code: OOD**

Object-Oriented Mentor

Openings for mentors to provide guidance on how best to use Object-Oriented Technology, Design Patterns, and Object-Oriented Layer Architecture. Background in the use of CORBA, Design Patterns, VisualAge, Smalltalk and JAVA required. **Job Code: OOM**

Programmer Analyst

Several openings for entry to senior level candidates with backgrounds in any of the following areas: Mainframe COBOL, IMS, CICS, DB2, Mid-range Client/Server, HP-UNIX, AIX, Informix 4GL/ISQL/EQSL, Oracle, Shell or PERL Scripting, C++, EASEL, "Object Systems Integrators NetExpert", Development platform, or Workstation NT. Experience in TCP/IP, SNA, DB2/2, and Socket Programming also required for some of these positions. **Job Code: PA**

All positions require candidates with strong communication skills and the ability to work in a team environment. Must work well with internal customers and all levels of management, with multi-task time management skills. Bachelor's degree in Computer Science, Engineering, or equivalent experience required.

Sprint offers competitive salaries, outstanding benefits, relocation package and the opportunity to develop your career utilizing the latest technology. Please send your resume, specifying job code, to: Sprint, Dept. LRC/KC1109, 6600 College Blvd., Ste. 215, Mailstop KSOPKQ0111, Overland Park, KS 66211, FAX (913) 624-7063. We are proud to be an EEO/AA employer M/F/D/V. Also, we maintain a drug-free workplace and perform pre-employment substance abuse testing.

Sprint.

Medical Mutual of Ohio, a progressive leader in the healthcare insurance field in Cleveland, Ohio, has the following openings for talented, dynamic I/T professionals:

SYSTEMS DESIGN/DATABASE MANAGEMENT ANALYSTS

These positions ensure consistently high quality systems design with regard to user DP compatibility, cost-effectiveness and ease of operation and maintenance; design complex subsystems that are essential for the implementation of sophisticated computer-based systems; and provide overall project leadership. We require a bachelor's degree in computer science or a related discipline, or equivalent understanding of information systems methodology, hardware and software; experience in information systems should encompass analysis/design, programming, COBOL/CICS, systems design/project management, and database administration (DB2, ORACLE), demonstrated understanding of databases and data communications; and strong supervisory skills.

NETWORK SYSTEMS PROGRAMMER

This position will be responsible for design and implementation of hardware and software in a multiprotocol network infrastructure. Demonstrated understanding of routers, switches, gateways and FEPS in a telewring environment. Experience with TCP/IP, IPX and SNA protocols. Ability to implement network management products. The candidate should have knowledge of: OS MVS/VM/AIX; VTAM/NCP; IBM-Systemview/HP Openview; NT/SNA Server; Session Manager/Single Signon; Win/95; Network Capacity, performance and tuning utilities; Network troubleshooting methodologies.

COBOL/CICS PROGRAMMER ANALYSTS

To qualify for these positions, you must have 2 or more years' COBOL/CICS experience, strong communications and interpersonal skills, and the ability to be part of a project team.

COME WHERE INFORMATION TECHNOLOGY IS

MANY OTHER INFORMATION TECHNOLOGY POSITIONS ARE AVAILABLE. Medical Mutual of Ohio offers attractive salaries and benefits as well as strong potential for career development with our progressive, growth-oriented company. For confidential consideration, please send resume and letter indicating area of interest to: Medical Mutual of Ohio, Attn: HR-DS, 2060 East Ninth St., Cleveland, OH 44115. Fax: 216-687-1772. For more information on Medical Mutual of Ohio, please visit our home page at www.mmoh.com. EOE M/F/D/V.

MEDICAL MUTUAL OF OHIO

Your healthcare partner since 1934

---

98 COMPUTERWORLD

ORLANDO FLORIDA
May 17-20, 1998
Marriott's Orlando World Center Resort
1-800-488-9204

Programmer/Analyst: Programs, tests, designs, develops and modifies software applications for data processing and management information systems in support social science research development. Performs software development using C/C++ and UNIX shell including development graphic user interfaces using Visual C++ for implementation of relational database management system including use of embedded SQL. Requires Bachelor's degree in Computer Science. Also requires nine months experience in the job to be performed or nine months experience as a Software Engineer. If experience in related field, entire experience must include development of software applications for management information systems using C or C++. Education to include completion of one project in the implementation of a relational database management system using embedded SQL as well as C. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $36,000.00 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send resume to: Illinois Department of Employment Security, 401 S. State Street - 7 North, Chicago, IL 60605. Attention LEN BOKSA. Reference #V-IL 18096-B. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Senior Systems Analyst; Medical Software Northbrook, Illinois. Medical Software Developer has a full-time, 9:00 a.m. - 5:00 p.m. position for a Senior Systems Analyst. Duties include designing Coded Medical Knowledge Database for Intelligent Medical Record and Support the current Knowledge Base and programming to phrases that are not available in the English, of Electronic Record, by translating into French. Perform Database Access and Graphic User Interface (GUI) programming at Client Server Database Topology, developing software and patient record under network environment using Oracle Relational Database Management Systems. Minimum education: M.S. in Computer Science; 2 years experience in job offered or as Systems Analyst. Must understand, read and write Medical Knowledge in French language in order to design changes to Intelligent Medical Database for French needs. Salary: $60,000/YR. Must have proof of legal authority to work permanently in the United States. Applicants send 2 copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 NORTH, Chicago, IL 60605 ATTN: JACK SCHAFFER. REFERENCE V-IL 16139-H. NO CALLS. AN EMPLOYER PAID AD.

Silver Engineer: Design, develop, test & implement networks, servers, op. sys & applic'ns used in Info Systems including network environment of Novell Netware & MS NT Op. Sys; Configure appl'ns or a network environment; Configure, maintain, upgrade & support Novell & MS NT servers on a 500 user LAN & WAN w/ Novell Netware 3.x, 4.1 & LAN Mgr. Convert compatible data/files from one server to another & install appl'ns on the server; Recover network data from sys. Failures; Maintain & troubleshoot hrdwr & sftwr problem in the networks. 9.45K/yr, 40hr/wk, 8-5, Master in MIS or related fields, 2 month experience in the job or 2 month as Network Adm'tor req'd. Apply at the Texas Workforce Commission, Houston, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O.# TX0240750. Ad paid by an Equal Opportunity Employer.

98 COMPUTERWORLD

Programmer/Analyst: 5 openings, Milwaukee branch of international software consultant firm seeks individuals to be responsible for program planning, design, coding, & testing using COBOL, CICS, IMS, C, Visual Basic & Access, in PC, mainframe, and client/server environments; test data preparation & test runs; translate stand-alone modules. REQUIRES: Bachelor's degree in computer science, computer engineering, OR MIS. Must have skill using either COBOL, CICS, IMS, C, Visual Basic, or Access. Be demonstrated by a college-level course or a 6-month student internship/employment using any one of these technologies. SALARY: $33,300 to $39,000. 40 hour work week, 8:00 - 5:00, M-F. SEND 2 COPIES OF RESUME TO: MIKE BROOKS, DWE-ALC, PO BOX 7972, Madison, WI 53707-7972. REFER TO CASE NO. C100320.

COMPUTER PROGRAMMER
(Entry Level)

OPPORTUNITY

Stuller Settings is the largest and most successful jewelry manufacturing company in the United States.

QUALIFICATIONS

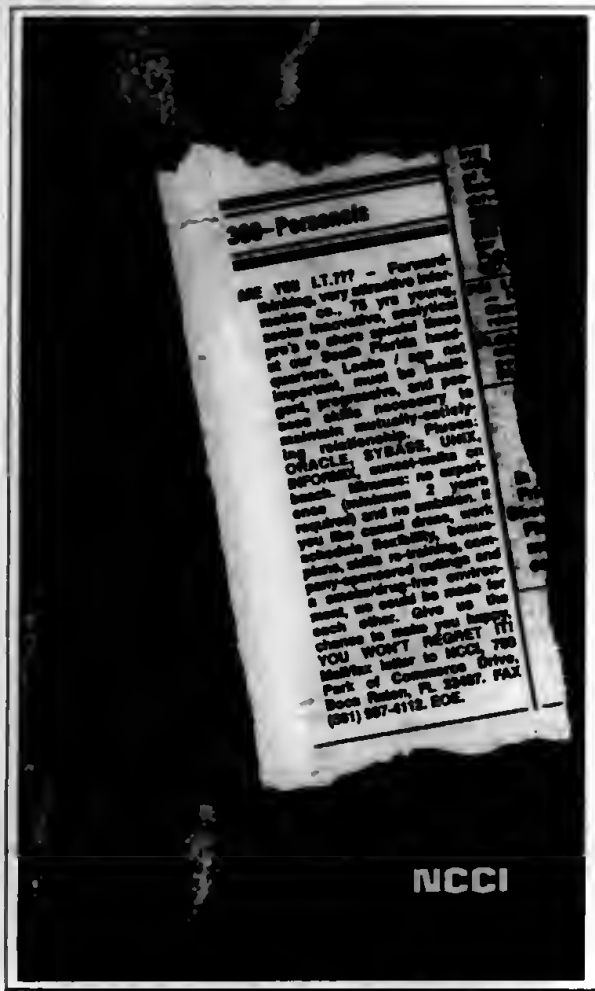
Qualified applicants should have one to two years of COBOL programming experience or a degree in Computer Science.

REWARD

We reward our employees with competitive compensation supplemented by a comprehensive benefits package including a 401(k) plan and a bonus plan. Relocation assistance will be provided. For prompt consideration please send your confidential resume with salary history and requirements to:

STULLER SETTINGS
Attn: Spencer Smith
302 Rue Louis XIV
Lafayette, LA 70508

STULLER SETTINGS



Computer/Info Systems

FUNCTIONAL TEAM TECHNICAL ANALYST/ PROGRAMMER

Temporary Position: Spend the winter in St. Petersburg, FL, and the summer in Syracuse, NY

Niagara Mohawk Power Company, in a joint venture with Andersen Consulting, is implementing a new state-of-the-art customer service and work process system using Andersen's Customer/1 software. We're currently seeking technical analysts to participate in the full life cycle of the project. The development phase will take place in St. Petersburg from November 97 through April 98, the Functional Development team will then be relocated to Syracuse for system implementation expected to last at least through November 98.

Your responsibilities will include:

- Participate in detailed design, coding and testing in St. Petersburg.
- Participate in overall systems test and resulting changes and final implementation in Syracuse.

To qualify, you must have a Bachelor's degree or equivalent, application development experience in a Windows/client server environment, a solid understanding of customer service and related business processes, and the ability to learn Customer/1 business functions in detail.

Niagara Mohawk offers a relocation package, along with competitive compensation and the potential for financial incentives based on project performance. Please send resume and salary history to: **Linda Clark, Organization Staffing, Niagara Mohawk Power Corp., 1304 Buckley Rd., N. Syracuse, NY 13212.** No phone calls, please.

NIAGARA MOHAWK

Niagara Mohawk is committed to a diverse workplace and encourages women and minorities to apply. EOE M/F

Careers COMPUTERWORLD

http://careers.computerworld.com

CICS/DB2

Systems Manager/ Systems Programmers

VF Corporation, an international Fortune 500 apparel company, has immediate full-time openings for a Systems Manager and Systems Programmers in Greensboro, NC.

Join team responsible for installation, maintenance, tuning and problem resolution for latest releases of CICS, DB2, IDMS, IMS and related program products. Opportunity to learn ORACLE and SAP. Excellent salary and benefits.

Fax resume to Human Resource Manager, 910-332-3941, or mail to:

Human Resource Manager
VF Services, Inc.
PO. Box 21488
Greensboro, NC 27420-1488

Visit our home page at

http://www.threads.vfc.com

FIRMWARE ENGINEER to design, develop, test implement, maintain and support electronics circuits for weapons simulators. Design and test a video/graphics board using TMS320C32 DSP EPLD and FPGA technologies. JPEG/MPEG and video/graphics related VLSI chips. Develop software and firmware for real-time embedded systems using C/C++, Assembly, TCP/IP and client/server programming in IBM PC Windows/NT and UNIX/SunSparc environments. Research and develop new algorithms for human body motion capture. Require: Master's degree in Computer/Electronics Engineering, with two years of experience in the job offered; A Ph.D. degree in Computer/Electronics Engineering with a demonstrated ability in the above-listed skills gained through previous work experience/academic course work will be accepted in lieu of the M.S. degree and two years of experience. Salary: $50,665 per year. 8 am to 5 pm, M-F. Send resume to: Jim Hall, Firearms Training Systems, Inc. 7340 McGinnis Ferry Rd., Suwanee, GA 30174. Attn: Dept HL.

Software Engineer needed for Info Technologies Co in Parsippany, NJ. Must have 2yr exp analyzing/design/dvlpg fin'l applics on client/server architecture w/OO techniques & dynamic data exchange, using PowerBuilder, Foundation Class Libraries & Sybase/Oracle Databases on Win NT, Unix platforms & CT-Lib C/Pro*C & open database connectivity. Employer paid travel to client sites in upper NE states. Must have BS Comp Sci or Electrical Engg. Respond to: HR Dept, Global Consultants Inc, 601 Jefferson Rd, Ste LL, Parsippany, NJ 07054.

Director of Educational Technology Services (EduTech)

Wayne-Finger Lakes BOCES, Newark NY

The Wayne-Finger Lakes BOCES, located 25 miles east of Rochester, has a unique opportunity for a skilled educator, supervisor and technologist. EduTech serves two BOCES in upstate NY, providing instructional & administrative computer & technology support to 47 school districts & their 78,000 students. Duties include providing leadership & guidance to EduTech's 95 employee's; Working closely with school superintendents to coordinate/support the integration of technology into classrooms to improve student achievement; Lead the development of Intranet & Internet applications on LAKENet, a high speed network connecting these districts together; Serving as the liaison to the State Education Department; Overseeing & being responsible for an $11,000,000 budget. Qualifications: Strong managerial capabilities in developing, supporting & guiding employees. Ability to communicate with diverse audience & excellent human relations skills are needed. Experience as a school administrator or executive/manager in private sector technology company. Salary range $75,000 - $85,000. Deadline 1/4/98. Send resume and cover letter to **Wayne-Finger Lakes BOCES, Personnel Office, 131 Drumlin Court, Newark NY 14513-1883. For additional information contact www.edutech.org**

www.edutech.org

THE FUTURE IS NOW.

First Union Corporation has assets of $143 billion, and is ranked as the nation's sixth largest bank holding company. We serve the economically diverse east coast from Florida to Connecticut. Our commitment to technology allows us to offer you these excellent opportunities to join a company with its sights set on the future.

PeopleSoft Implementation Specialists
- Human Resources Management Systems - payroll, benefits and recruiting

Networking Engineers/ Systems Administrators
Design, install, maintain and support multi-platform environments including Windows NT, UNIX, email, CM/2, Lotus Notes

Mainframe Programmer Analysts
- COBOL, DB2, IMS

Internet/Intranet Designers

Telecommunications Specialists
- Voice & Data transmission

Technical Support Analysts
First through third-level support for both proprietary and third party applications

Client/Server Developers
- Decision-support systems
- Data mining
- Access
- Oracle Developers 2000
- Visual Age
- C/C++
- Visual Basic
- SmallTalk
- Object-Oriented technology

First Union offers a competitive salary and benefits package. Interested candidates should forward resume and salary requirements to: First Union National Bank, Ad Code: A1OW67455, P.O. Box 25970, Richmond, VA 23260 or fax to: 804-771-7398.

First Union utilizes drug testing as a condition of employment. For more information on First Union and other exciting opportunities, visit us at: www.firstunion.com

FIRST UNION®

An Equal Opportunity Employer M/F/D/V

Medical Mutual of Ohio, a progressive leader in the healthcare insurance field in Cleveland, Ohio, has the following openings for talented, dynamic I/T professionals:

SYSTEMS DESIGN/DATABASE MANAGEMENT ANALYSTS

These positions ensure consistently high quality systems design with regard to user DP compatibility, cost-effectiveness and ease of operation and maintenance; design complex subsystems that are essential for the implementation of sophisticated computer-based systems; and provide overall project leadership. We require a bachelor's degree in computer science or a related discipline, or equivalent understanding of information systems methodology, hardware and software; experience in information systems should encompass analysis/design, programming, COBOL/CICS, systems design/project management, and database administration (DB2, ORACLE), demonstrated understanding of databases and data communications; and strong supervisory skills.

NETWORK SYSTEMS PROGRAMMER

This position will be responsible for design and implementation of hardware and software in a multiprotocol network infrastructure. Demonstrated understanding of routers, switches, gateways and PEPS in a tokenring environment. Experience with TCP/IP, IPX and SNA protocols. Ability to implement network management products. The candidate should have knowledge of: OS MVS/VM/AIX; VTAM/NCP; IBM-Systemview/HP Openview; NT/SNA Server; Session Manager/Single Signon; Win/95; Network Capacity, performance and tuning utilities, Network troubleshooting methodologies.

COBOL/CICS PROGRAMMER ANALYSTS

To qualify for these positions, you must have 2 or more years' COBOL/CICS experience, strong communications and interpersonal skills, and the ability to be part of a project team.

COME WHERE INFORMATION TECHNOLOGY IS

MANY OTHER INFORMATION TECHNOLOGY POSITIONS ARE AVAILABLE. Medical Mutual of Ohio offers attractive salaries and benefits as well as strong potential for career development with our progressive, growth-oriented company. For confidential consideration, please send resume and letter indicating area of interest to **Medical Mutual of Ohio, Attn: HR-DG, 2060 East Ninth St., Cleveland, OH 44115. Fax: 216-687-1772. For more information on Medical Mutual of Ohio, please visit our home page at www.mmoh.com.** EOE M/F/D/V.

MEDICAL MUTUAL OF OHIO®

Your healthcare partner since 1934

Visitors Call It Vacation

The County of Volusia, Florida - 47 miles of beaches, recreational, cultural and educational centers; Daytona International Speedway more than 400,000 people call it home.

INFORMATION TECHNOLOGY DIRECTOR (1635A)

We are seeking a Director of Information Technology to manage migration from mainframe to client/server technology. Requires a Bachelor's degree in Computer Science, Mathematics, Business Administration, Public Administration, or related field, plus five years of progressively responsible administrative experience in data processing.

The preferred applicant will have
- equivalent 5 years recent cutting-edge information systems experience in an organization of comparable size and complexity
- experience in local government with demonstrated success in managing both people and projects
- strong customer service orientation
- be vendor objective
- excellent communication skills
- ability to motivate subordinates and develop them into an effective client-focused team
- vision to anticipate and implement information technology needs for a full-service county with a Council/Manager form of government.

A comparable amount of education, training, or experience may be substituted for the minimum qualifications. Responsible for managing and administering the 88 employee information technology group with an approximate $8.3 million budget. Currently organized into 6 activities - business information systems, criminal justice information systems, microcomputers, communications including 800 MHZ, geographic information, and central reproduction.

Salary: Depending on qualifications. Closes: Opened until filled.
Apply: County of Volusia Personnel Services, 123 W. Indiana Ave., DeLand, FL 32720-4607

Applications available at website http://Volusia.org or at Volusia County Public Libraries or call (904)736-5951, 423-3300 or 257-6000
EOE/AA

You Call It Home

SDS

An Information Technology Firm

Permanent and contract positions are currently available throughout the Southeast. Any and all skills are of interest to us:

• CLIENT SERVER • MAINFRAME • MIDRANGE

Excellent compensation and benefits, training, relo. assistance, and 401-K. Call or write today: Software Data Services, Inc., 4600 Park Road, Suite 109, Charlotte, NC 28209.

Information Systems Professionals

DB2, IMS or CICS COBOL, NATURAL, ORACLE/PRO C - to $75,000

QUALITY ASSURANCE TESTERS, UNIX ADMINS, TECH WRITERS - to $65,000

ALSO NEEDED: WEBMASTERS

Positions available in NE Florida
Fax Resumes to:

World Software Solutions, Inc.
(904) 272-1011 or 1-888-880-WSSI (9774)

WOULD YOU LIKE TO
CONTINUE YOUR EDUCATION?

WOULD YOU LIKE TO WORK IN A PLACE WITH
ON-SITE DAYCARE?

HOW ABOUT GREAT BENEFITS -
HEALTH, DENTAL, EYE CARE, PENSION?

RIGHT AT YOUR WORKPLACE
GYM AND POOL FACILITIES?

Ramapo College can offer employees these terrific fringe benefits and more. Our employees enjoy a real sense of community while working in an academic environment and a beautiful campus setting. Ramapo College, a public, border-free institution approximately 25 miles from New York City, is committed to global education. We now have two fantastic opportunities:

COBOL PROGRAMMER/ANALYST - You will support the on-line Human Resources/Payroll and Financial Records Systems based on DEC VAX and SCT's IA (Information Associates) software. You must have COBOL programming experience, demonstrated project leadership and excellent communication skills. Experience with VAX/DCL and IA software very desirable. Requires bachelor's degree + three years of professional experience in the design, analysis and preparation of programs for electronic data processing equipment utilizing current operating systems. Note: Experience may be substituted for education "on a year-for-year basis. A master's degree may be substituted for one year of the required experience; a Ph.D. or Ed.D. may be substituted for two years of the required experience. Salary: High $30's to Low $40's.

COMPUTER SUPPORT SPECIALIST in the College Library - You will maintain and support existing hardware and Windows-based software, diagnose and resolve hardware and printer problems, prepare status reports. You will train and assist Library staff and act as the liaison between the Library and the Computing Center. Requires bachelor's degree + one year of professional experience. Note: Experience may be substituted for education on a year-for-year basis. Salary: High $20's to Low $30's.

To request accommodations, call 201-529-7498, fax 201-529-7508. Please submit letter, vitae and addresses and telephone numbers of three references to:

Human Resources, Ramapo College of New Jersey, 505 Ramapo Valley Road, Mahwah, New Jersey 07430

EEO/AFFIRMATIVE ACTION

[redacted]

Jefferson Pilot and its subsidiary, Chubb Life Insurance Company of America, are known as companies that value their people. That's why professional development is as much a concern as the well-being of our employees. Education programs and flexible work hours are just part of what you'll enjoy. Isn't it time you experienced the best life has to offer?

We are looking for candidates who possess at least 2 - 5 years of experience or equivalent education to fill the following positions in our Jefferson-Pilot facility in Greensboro, NC, and our Chubb Life facility in Concord, NH:

- **PROGRAMMER ANALYSTS**
- **SENIOR PROGRAMMER ANALYSTS**
- **DATABASE ANALYSTS**
- **APPLICATION SPECIALISTS**
- **SYSTEMS ANALYSTS**
- **TECHNICAL PROGRAMMERS**
- **MAINFRAME:**
  COBOL, DBII, CICS, Assembler, Vantage, JCL, MVS, OO, CSP.
- **CLIENT SERVER:**
  SQL Windows, Powerbuilder, Informix, UNIX, C/C++, Visual Basic, Windows NT, Windows 95, SQL Server, RS6000.

Jefferson Pilot offers competitive salaries and excellent benefits including 401(k) and pension plan. Please forward your resume to: Chubb Life Insurance Company of America, Attn: Human Resources, One Granite Place, Concord, New Hampshire 03301. Fax: 603-226-5727. An Equal Opportunity Employer. M/F/D/V.

Jefferson Pilot

INFORMIX®
Unleashing Business Innovation

Informix ® the technological leader in database management software. In our Miami office we have multiple employment opportunities at all levels for software technical professionals to work in partnership with our operations in Latin America. Fluency in Spanish and/or Portuguese a plus. We seek SOFTWARE ENGINEERS & SALES ENGINEERS with experience in some of the following: *Unix *C *C++ *RDBMS.

Informix offers generous compensation and comprehensive benefits. For immediate consideration, please send your resume indicating position of interest to: **Recruiter, Informix Software, Inc., 6303 Blue Lagoon Drive, Suite 305, Miami, FL 33126.**

For more details and information on other opportunities at Informix, please look under "What's New" on our Website www.informix.com

We are committed to workforce diversity. EOE

Programmer/Analyst - Computer programming modifications and development. Plan, develop, test, and document computer programs, applying knowledge of programming technique and computer systems. Analyzes and evaluates existing or proposed system, and devise computer programs, systems and related procedures to process data. Perform system analysis and then coding and testing of maintenance and enhancement projects. Trouble shoot user inquiries involving HP-3000 Mainframe computer Technology used is HP-3000 programming in COBOL, HP-3000 programming in Cognos Powerhouse. Bachelor's degree in Computer Science or Computer Engineering. Must have 2yrs exp as a Programmer Analyst or Systems Analyst proficiency in Powerhouse toolset on the HP-3000 platform. 40hrs/wk, 8:30-5:30. $43,000/yr. Send resume (no calls) with social security # and job order # NC7274051 and DOT code 030.162-014 to Job Services, 700 Wade Avenue, P.O. Box 27227, Raleigh, NC 27611. Must have proof of legal authority to work in U.S. "Employer Paid Ad"

This Web Site
e-mails you with the career opportunities you want.

Register today and use CareerMail

http://careers.computerworld.com

itCareers.

Where the careers find you.

[A Continuing Discussion]

The Cool Objects Connection

We Were Just Discussing You...

At The Technical Resource Connection, good architects, designer/developers, and modelers are never far from our thoughts. And we do more than talk about technologists—we hire them.

800-872-2992 ■ Fax: 813-891-6138
http://www.trcinc.com/jobs/cart ■ e-mail: staffing@trcinc.com

Call, or fax or e-mail your resume to:
The Technical Resource Connection, Inc.,
a wholly owned subsidiary of Perot Systems Corporation

SENIOR SYSTEMS ANALYST/ DATABASE ADMINISTRATOR to design, develop, test, implement, maintain and support computer systems and Graphical User Interfaces for warehousing, accounting, sales, and marketing applications using Oracle, SQL*-Forms, SQL*Plus, SQL*Report-Writer, Developer 2000, Discover 2000, Pro*C, SQR, Oracle CASE tools, PowerBuilder; Visual Basic, UNIX scripts, SQL, C, and MF-COBOL under MS-Windows and UNIX environments. Setup and administer Oracle RDBMS servers for Lawson Systems and Comber Warehouse Systems built in MF-COBOL ISAM structure, and design the interfaces between each. Support and design the EDI database with GENTRAN software. Migrate databases from Lawson to Oracle; Conduct Internet On-line system development. Require M.S. degree in Computer Science and two years of experience in the job offered or in the related occupation of Systems Developer. Experience gained before or after earning M.S.C.S. degree will be accepted. Salary: $50,000/year. M-F, 9 a.m. to 6 p.m. Send resume to: Georgia Department of Labor, Job Order # GA 6167157, 1535 Atkinson Road, Lawrenceville, Ga 30243-5801 or the nearest Department of Labor Field Service Office

Software Engineer 40 hrs/wk. 9am-5pm. $55,000/yr Design, develop & support large scale computer systems to support management decision making for railcar scheduling, routing & tracking. Analysis of user requirements. Implementation of optimization techniques. Develop network support strategies for remote location access. Development of complex graphical user interfaces. Embed models in an integrated decision-support system using object-oriented techniques Tools: C, C++, MS Windows, UNIX, Motif. *M.S in Computer Science as well as 1 yr. in job offered or as an Analyst required. (*Also acceptable: 1) M.S. in Engg w/ 18 credits in computer-related courses; or 2) B.S. in Computer Science + 3 yrs. exp. in software development.) Previous exp must include design & development of a large-scale transportation scheduling system, implementation of mathematical optimization algorithms; networking, GUI design & development; C, C++, object-oriented techniques; MS Windows; UNIX; Motif. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605. Attention: Mary Miller. Reference #V-IL-16491-M. NO CALLS. An Employer Paid Ad.

SYSTEMS ANALYST/ADMINISTRATOR Analyze, design, develop, maintain, support and perform end-user training of business applications specific to company's import processes. Support and maintain COBOL/CICS legacy application. Data conversion of downloaded mainframe data to Foxpro for Windows using ODBC and flat file data mapping Tools: Foxpro for Windows, Lotus Notes, Approach 96, 123 ver 5.0 spreadsheet, MS Excel 7.0, Novell Netware Administration, in a mixed DOS 6.2, Win 3.11, Win 95, Netware 4.1 and OS/2 Warp environment. Must have BS in computer science, or degree in engineering discipline with 16 credit hours of computer science courses, and 1 yr experience in job offered or as computer engineer. Previous experience must include development of inventory management system and billing system, and use of Foxpro for Windows, Lotus Notes, MS Excel, ODBC, Flatfile data mapping, 40 hours per week, 9:00 A.M. to 5:00 P.M., $33,000/yr Bensenville, IL. Must have proof of legal authority to work permanently in the US. Send resumes to IL Dept of Employment Security, 401 S. State St.- 7 North, Chicago, IL 60605 Attn: Brenda Kelly Reference #V-IL 17761-R An employer paid ad. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Computer Consulting
Windows NT
Server and Workstation Rollouts
PC/Novell/Mac
Level 1,2 and 3 support
MS Backoffice
NT, SMS, IIS, SQL, Exchange
Router Experts
All Levels. Design Work & Config
Network Engrs
Hubs, Switches, Structured Wiring
Project Mgrs
PMTS, Onsite, IIS Project
UNIX Admins
HP, IBM, AIX, HES
Please forward resume or call:
NSS Network Support Services
A CSD of America company
242 Old New Brunswick Rd
Piscataway, NJ 08854
Phone: 888-746-4877
Fax: 888-746-4878
www.networksupportservices.com

Stratus
The Availability Company

It's not a problem, because it's never going to happen — particularly when using Stratus technology. In fact, our relentless dependability and unfailing success rate are why some of today's most prominent Wall Street organizations turn to Stratus.

not problem.

As a leading provider of comprehensive computer solutions for mission-critical online environments, our products [illegible] regardless of circumstances, without fail. Which brings us to another area where we've proven extremely dependable — outstanding opportunities. At Stratus, we're also extremely proud of our energetic and fun environment, supportive management, and interesting projects. It's a place where you won't have to worry about lack of motivation or stagnation. A place where you'll be given all the resources you need to excel in a progressive career path. So isn't it time you took stock of an opportunity that's really going to pay off?

www.stratus.com

We are an equal opportunity employer dedicated to the strength diversity brings to our workplace. All trademarks belong to their respective companies

Stratus IS has recently completed the installation of Oracle Applications for Manufacturing, Financials and Distribution. We will continue to roll out these applications to our International Subsidiaries during 1998. In addition, we also have recently deployed the Siebel Sales Forces Automation package, and will launch the PeopleSoft HR System. Our IS department is currently seeking **Project Leaders** and **Programmers** who want to work with Stratus' exciting, leading-edge applications technology. You must be experienced in one or more of the following:

- **ORACLE MANUFACTURING, FINANCIALS AND ORDER ENTRY**
- **PEOPLESOFT HR**
- **SIEBEL SFA**

(Please reference Job Code: 450-527-528 for the above positions)

IS APPLICATIONS MANAGERS

We are seeking IS Managers to lead our continued worldwide deployment of strategic application systems, including Oracle, PeopleSoft and Siebel. To qualify, candidates must have 5-8 years' management experience in an IS environment along with strong leadership, communication and project management skills. Individuals should also possess solid technical skills and fundamentals, as well as a expertise in one or more areas, including Manufacturing, Engineering, Customer Service or HR. Positions provide opportunities for limited international travel. ***Job Code: ISM***

END-USER SUPPORT ANALYST ***(JOB CODE: 593)***

Telco

AIN SENIOR TECHNICAL CONSULTANT ***(JOB CODE: 517)***

CONSULTING SYSTEMS ENGINEER, San Francisco ***(JOB CODE: RM2)***

For immediate consideration, please send your resume via: e-mail: resumes@stratus.com; fax (scannable resumes only): (508) 480-0243; mail: Stratus Computer, Inc., Human Resources, M22-PER, 55 Fairbanks Blvd., Marlboro, MA 01752

Computer [illegible]

GRACE Technologies is a nationwide senior-level systems-integration and application-development firm as well as an Oracle reseller and alliance partner.

Our continuing growth has created opportunities in CENTRAL NEW JERSEY for talented professionals in the following areas:

- **LAWSON HR/PAYROLL**
- **LAWSON FINANCIALS**
- **ORACLE DBA/TUNER**
- **SYSTEMS ARCHITECT**
- **INTERFACE DEVELOPERS**
- **(Data migration experience necessary)**

If you have the right qualifications we have generous compensations, including strong career potential. For immediate consideration, Call or Fax/E-mail resume to: Technical Recruiter
GRACE TECHNOLOGIES
222 Rte 46 W., Suite 250 E
Parsippany, NJ 07054.
FAX: (201) 244-8342
TEL: (800) 787-7017 ext. 341 or 322
E-mail@recruiting.@gracetech.com

Grace Consulting, Inc. Maintenance Int. TECHNOLOGIES
ORACLE

Professionalism, Integrity, Opportunity
SAP R/3
THE CONSULTING ALLIANCE LLC
Are you missing these qualities in your career?
The Consulting Alliance provides distinguished consulting and training services to SAP clients worldwide and creates an atmosphere of partnership with its consultants. We are encouraging flexible,
Experienced Organizational & Technical Consultants
with 2 or more years of SAP experience and an associated degree to contact us at the following numbers.
By Fax: 605-339-2947, Phone: 605-339-3074
or by e-mail: laurie@orpartner.com. A competitive salary and benefits package as well as a positive challenge await you.

98 COMPUTERWORLD
ORLANDO FLORIDA
May 17-20, 1998
Marriott's Orlando World Center Resort
1-800-488-9204

Find training now.
CAREER AGENT
careeragent.[illegible].com

Simply the BEST
OREGON BEST CONSULTING
Enjoy the Pacific Northwest lifestyle with the best of the BEST. Projects range from new development for mainframe developers to designing solutions for complex systems integration challenges. Excellent partnering relationships with client base. Generous salaries - enhance-style benefits - constant training opportunities. To learn how you can benefit from our growth needs, contact or send resume to:
BEST Consulting
700 N.E. Multnomah, Suite 1100
Portland, OR 97232
(503) 236-5776 (503) 236-5784 FAX
1-800-224-1286

WHERE NETWORKING BEGINS

"Together we are going to redefine the network and systems management market."
- Michael Holthouse, President Sprint Paranet

Sprint is the most technically aggressive major communications carrier in the market, and Paranet is the oldest and largest vendor-independent computer network services provider. These two companies are now combining efforts with the goal of redefining the market. Sprint has the only fully managed fiber network available today, and Sprint Paranet is their independent business unit focused on computer network design, implementation, integration, management and support. As the most entrepreneurial, empowering company in computer networking and systems management, Sprint Paranet is experiencing phenomenal growth. We're making connections in every area and every field, and we need knowledgeable team players to drive our success. Consider Sprint Paranet today, and see how networking is done.

UNIX Administrators
SunOS, Solaris, HP-UX, AIX, NFS, NIS+, DNS, Automounter, TCP/IP, Multi-platform integration, UNIX Security, Disaster Recovery projects

Network Analysts
Multi-protocol LAN and WAN design/support projects, TCP/IP, IPX, Appletalk, Ethernet, Token Ring, FDDI, ATM, Routers, Bridges, Network Management Tools (HP Openview, SunNet Manager, Netview 6000, Network General Sniffer)

NOS Administrators
Netware 3.x-4.x, MS Windows NT 3.51-4.0, NT BackOffice, Large scale design, implementation and support projects, Lotus Notes, MS Exchange, SMS

Qualified candidates should send their resumes with **Job Code: CPW1117** to: **Sprint Paranet, 1776 Yorktown, Suite #300, Houston, TX 77056, Fax: (888) 525-7476; Email: eagles@paranet.com (text format is strongly preferred.)**

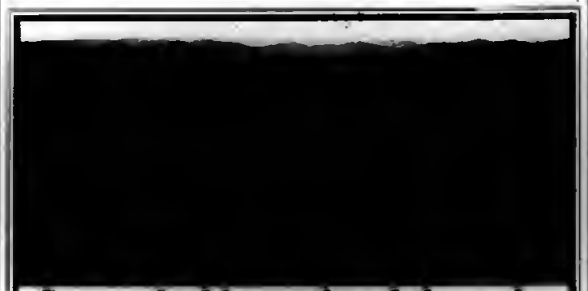
Please indicate your geographic preference: **Atlanta, Austin, Boca Raton, Boston, Chicago, Dallas, Denver, Detroit, Houston, Kansas City, Los Angeles, Miami, Minneapolis, New Jersey, New Orleans, New York, Philadelphia, Phoenix, Raleigh, Salt Lake City, San Francisco, San Jose, Tulsa or Washington, D.C.**

Sprint.

Sprint Paranet
Integrating Hardware, Software, Networks & People

EOE, m/f/d/v.
No ducks, please.

www.paranet.com



Create the biggest breakthroughs in the country.

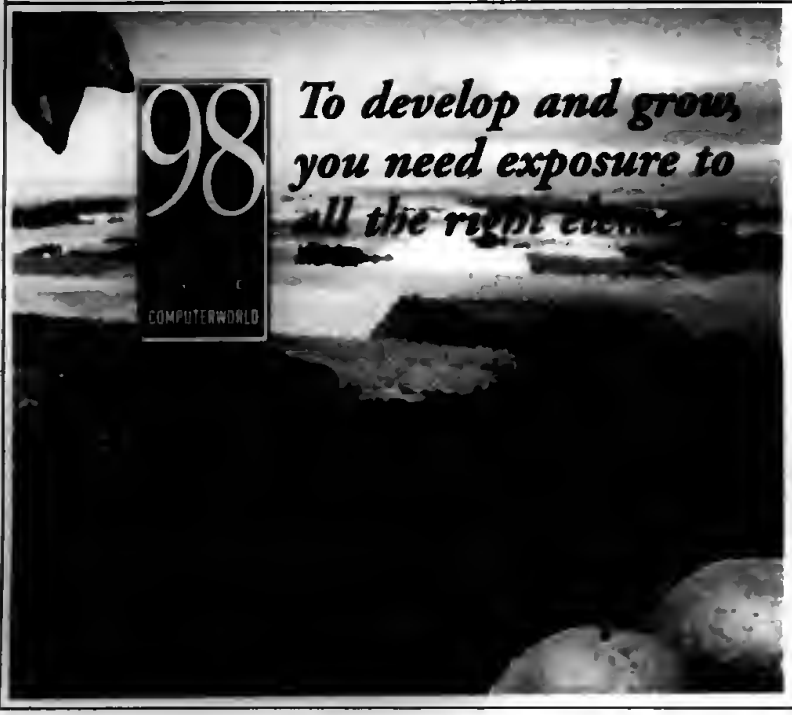
Voice-activated technologies. ATM Communications. More than 30 million lines of code. 90% developed in-house. Being the best in the world means having the best systems. And that's what we're creating. Join forces with Wal-Mart, and the picture gets even more scenic - it's all set among the beauty of the Ozarks. In fact, Wal-Mart's I.S. Division was listed in *CIO Magazine's* CIO-100's World Leaders edition. From the freshest air to the freshest thinking, people are naturally doing more at Wal-Mart.

Opportunities exist for positions using:
- UNIX - C, C++, Administration, Engineering, Powerbuilder, Informix DBA's
- PC Workstation - VB, VC++, NT, SQL Server, Java
- IBM Mainframe - COBOL, CICS, DB2 & IMS DBA's
- Networking - Ethernet, VSAT, Frame Relay, ATM
- Telecommunications

Wal-Mart offers an excellent benefits package, including stock options, and a very competitive salary. If having the best of both worlds - advanced technology and natural amenities - interests you, send/fax your resume and cover letter to:

WAL★MART

Wal-Mart Information Systems Division; Attention: Recruiting Department ISDCW97;
702 S. W. 8th Street; Bentonville, AR 72716-0800; Fax: 501-273-0878; E-mail: techjob@wal-mart.com
For more information, call toll free: 1-800-JOBS-ISD or check out our career page at: www.wal-mart.com/careers/isd
EOE M/F/D/V



Find training now.
careeragent.com
CAREER AGENT
careeragent.computerworld.com

SAP

WORLDWIDE IMPLEMENTATIONS

ALL MODULES

FUNCTIONAL CONFIGURATION
ABAP
BASIS

1975 North Park Place
Atlanta, GA 30339
800-599-9550
770-955-1714
FAX: 770-937-0423
e-mail: slc11@aol.com
EOE, MEMBER NACCB

STRUCTURED LOGIC COMPANY, INC.

SAP NATIONAL

BREAKTHROUGH SYSTEMS
EXCEPTIONAL TALENT

Please mail, fax or e-mail your resume to:

TANNING TECHNOLOGY CORPORATION
4600 SO. ULSTER ST., SUITE 300, DENVER, CO 80237
FAX 303-220-9950; E-MAIL jobs@tanning.com.
VISIT OUR WEB SITE AT http://www.tanning.com.

THE BEST MINDS, THE BEST OPPORTUNITIES

I GET PSYCHED ON MONDAY MORNINGS.

Your new systems job. You love it so much, you can't wait for the weekend to be history.

A pipe dream? Not for our systems people. We're Fidelity Employer Services Company. We're creating technology-driven, leading-edge outsourcing solutions that are changing the way American businesses administer human resource and payroll operations.

We recruit the highest achievers in the industry — true visionaries at the top of their field. People who absolutely love what they do. Join us and you'll join a technical culture that exemplifies excellence — a company that's developing and implementing systems advancements others only dream about.

So change jobs. Change the world. And start looking forward to the weekdays at Fidelity Employer Services.

Fidelity Investments

FIDELITY EMPLOYER SERVICES CORPORATION

DARE TO LOVE YOUR JOB

HOW TO RESPOND

To be considered for one of the positions below, forward your resume or contact us. **Specify Job Code CL2674 on all responses.** When faxing resumes, also mail original to ensure that you'm in our national database.

Fax: 603-880-9616
Phone: For further information, call 603-791-5999.
Mail: Fidelity–Merrimack Staffing, P.O. Box 9600, Contra Way, Mail Zone T1J, Merrimack, NH 03054
E-Mail: richard.pierce@fmr.com

MERRIMACK, NH OPPORTUNITIES

We have numerous opportunities for **Developers, Project Leaders/Managers,** and **Continuing Engineering/ Tech Support Personnel,** with 1–15 years' experience in the following technology areas:

- SOFTWARE DEVELOPERS: ORACLE, UNIX, C/C++, PL/SQL
- WEB DEVELOPERS: JAVA, UNIX, C++
- CONTINUING ENGINEERING DEVELOPERS: ORACLE or PEOPLESOFT, UNIX, C
- ORACLE DATABASE ADMINISTRATORS: ORACLE APPLICATIONS Modules exp.
- UNIX ADMINISTRATORS: SUN/SOLARIS exp.
- SOFTWARE ENGINEER: CLEARCASE Installation exp.
- DATA MODELER: ORACLE, PHYSICAL/LOGICAL MODEL exp.
- VP PROJECT MANAGEMENT: PAYROLL, HRIS SYSTEMS
- PROJECT MANAGERS: PAYROLL, HRIS SYSTEMS

98
ORLANDO
FLORIDA
May 17-20, 1998
Marriott's Orlando
World Center Resort
1-800-488-9204

http://careers.computerworld.com

Global Resource Management
Technology Consultants

$200,000

SAP SCOPUS EDGE FORTÉ

GLOBAL RESOURCE MANAGEMENT
7705 Baymeadows Way, Suite 100
Jacksonville, FL 32256
(voice) • 800-400-

THE FUTURE IS WIDE OPEN

Delivering information today means dispensing with proprietary solutions and changing the rules. Sybase s Adaptive Component Architecture and Client/Server technologies are breaking out in front with wide open solutions in seven vertical markets. It s a new world for our clients and employees. Where exciting ideas are the standard and performance means finishing first. Your future is here and it s wide open. What are you waiting for?

We have excellent opportunities in Atlanta, Bethesda, California Bay Area, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Los Angeles, Minneapolis, New Jersey, New York, Philadelphia, St. Louis, and Toronto for the following professionals:

District Sales Managers *(Atlanta, Seattle, Los Angeles)*
Major Account Managers *(Telco, Public Sector, Financial)*
Account Executives *(Geographic, Cross-Industries)*
Product Lines Sales Representatives *(Database, Middleware, Tools)*
Telesales Representatives *(Concord, MA only)*
Customer Account Managers *(Customer Advocate)*
Pre-Sales Consultants *(Product Services)*

Sybase is proud to offer one of the best compensation packages in the industry. Please forward your resume, indicating position and location of interest, to: **Sybase, Inc., Attn: Cindy Roemer, 6550 Rock Spring Drive, Bethesda, MD 20817; fax: (301) 896-1605; e-mail: cindy.roemer@sybase.com.**

Sybase is an Equal Opportunity Employer.

SYBASE

WWW.SYBASE.COM/CAREERS

Hardware Engineer responsible for designing custom VLSI digital circuits for high speed microprocessor chips in CMOS technology. Duties will include participating in all aspects of developing behavioral model from specifications using hardware description language such as Verilog or C, designing circuits from the behavioral model and developing schematics using schematic editor such as Mentor Graphics Design Architect; performing circuit analysis using SPICE, timing analysis using timing verification tools such as PATHMILL and overseeing layout design work, performing various CMOS back-end design quality checks using layout verification package. Requirements are an MSEE with 2 years experience in job offered or 2 years experience as a Custom CMOS Circuit Design Engineer. 40 hr work week: 8:15 am to 5:00 pm M-F. Salary $56,262.50 per yr. Send 2 copies of your resume to Case # 71413, P.O. Box 8988, Boston, MA 02114 EOE. Applicants must be U.S. workers eligible to accept employment in the United States as a full-time basis.

Systems Analyst. 40 hrs/wk, 8am-5pm. $45,000/yr. Design, develop, implement & test software for Multimedia, Computer Based Training (CBT) applications. Graphical user interface (GUI design) Tools: Visual Basic; MS-Access; Windows; Lotus Notes; SQL, Visual C++. M.S. in "Computer Science as well as 1 yr. in job offered or as Programmer required ("M.S. in any engr'g field incld'g 18 graduate credits in computer science also acceptable.) Previous exp. must include, Visual Basic; MS-Access, Windows; Lotus Notes, SQL, Visual C++. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605, Attention: Sheila Lindsey, Reference #V-IL-17777-L. NO CALLS. An Employer Paid Ad.

Software engineer with 3 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 3 years of experience using Oracle RDBMS, Designer 2000, Developer 2000, Oracle Forms, Oracle-Reports, PL/SQL and SQL' Plus. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in one of several limited fields: engineering, mathematics, computer science or statistics. $65,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 5015116, to: Mr. Greg Schwing, Manager, Office of Employment Security, 2100 Wharton St., Pittsburgh, PA 15203

Find training now.

CAREER AGENT
careeragent.computerworld.com

http://careers.computerworld.com

To develop
and grow, you
need expos
to all th
98
CORPORATE
TECHNICAL
RECRUITING
CONFERENCE
COMPUTERWORLD

You never know when you'll get the urge to change directions and find the career of your dreams. Understanding this, EDP Contract Services™ has a Web Site that lists an extensive amount of IT contracting opportunities in locations across the globe. The Web Site is easy to navigate, comprehensive and up-to-date. New openings are continuously being added for long- and short-term assignments worldwide.

Voted one of the "PAC Worldwide Companies"

EDP Contract Services™

Areas of Opportunities:

- **Applications Development**
- **Systems and Network Analysis**
- **Systems, Network, and PC Support**
- **Software Re-Engineering**
- **System Administration**

And since the Web never sleeps, you can look us up whenever inspiration strikes at:

www.edpcs.com

Not only are we utterly accessible, we offer challenging, project-based assignments with top pay, plus career development, flexibility and independence, little to no down time between assignments, optional health care, 401(k), direct deposit, weekly payroll, and more. So connect anytime, 24 hours/day, 7 days/week. Or you can contact us at: 1-800-TAC-STAF. We'll be waiting for you.

EOE - M/F/D/V

Your leadership. Our proven resources. Together we can conquer complex business problems.

At Andersen Consulting, our daily goal is to help our clients change to be more successful by working with them to align people, processes and technology with strategy. Our teams of top-notch professionals leverage their proven expertise to help our world-class clients lead their markets. And every opportunity to help our clients grow and change is an opportunity to help yourself grow as well. Come define your career with Andersen Consulting, the firm that continues to define the global management and technology consulting market.

Chicago-Based Opportunities

- **Technology Solution Delivery Managers**
- **Technology Architect Managers**

The experienced professionals we seek will have broad exposure to a variety of technologies and concepts in a client/server environment, including:

- Enterprise-wide solutions
- Applications, architectures and software
- Distributed client/server architectures
- Large systems delivery and knowledge management
- Internet development, JAVA and HOT JAVA
- Windows NT, UNIX, C, C++, SQL, Oracle, Sybase, Informix, Visual Basic and/or Power Builder

You must be an innovative and results-oriented team player. A bachelor's degree is required; a master's is preferred. Excellent communication and presentation skills coupled with a solid six to ten year background of overall project management skills is mandatory. Your field of expertise must include demonstrated abilities in the areas of budgeting, team development and leadership, status reporting and project follow through. Travel will be a part of your professional commitment.

Andersen Consulting invests substantial financial resources in training our consultants and offers a wide variety of courses to encourage the development of expertise in specific businesses, technologies and industries. We are recognized for our leadership capabilities throughout the world. At Andersen Consulting, you'll find that challenge, opportunity and rewards go hand in hand. Discover your future with our leading-edge group of professionals... you've earned it.

For immediate consideration, please send resume and cover letter to: Andersen Consulting, Attn. D. Rigali, 33 W Monroe St., Chicago, IL 60603. Fax (312) 507-0909. No phone calls, please. Visit our web site at www.ac.com. Andersen Consulting is an Equal Opportunity Employer. ©1997 Andersen Consulting.

ANDERSEN CONSULTING

Senior Applications Developer to lead the technical design development and documentation of financial application software in an object-oriented client server environment; design and implement a financial subsystem to manage journal entries; design the client user interface to meet standard Windows GUI, provide high level technical and developmental support for financial application software; oversee development activities of others in the group, propose and implement procedures to improve the overall quality of products, assist in defining production schedules, coordinate efforts with other departments to ensure product integrity and technical depth, propose and coordinate prototype systems, discuss technical and design issues with users and customers. Requires B.S. in Computer Science or related Business/quantitative field and 5 years of project management experience to include at least 2 years developing financial application software. Must have experience using an object oriented, 4th generation language, development experience on multiple opening systems including Windows and UNIX and working with SAS/AF. Salary $60,000 35 hrs. wkly. Send resume to the NC Job Service @ 742-F East Chatham Street, Cary, NC 27511, or the job service nearest you. All resumes must include applicant's Social Security number and refer to Job Order #NC5770350 and DOT code 000.062-010.

RSA

RSA is a professional services firm providing both strategic technical services and business management solutions to software integration and systems implementation. We understand the critical factors of today's software integration projects and focus on providing our clients with practical, real-world solutions.

PeopleSoft:	SAP:
Technical Consultants	Functional R/3 Consultants/All Modules
Functional Consultants	ABAP Programmers
Project Leaders	Basis Consultants
Public Sector	Project Managers
Manufacturing Suite	
Complementary Technologies	
Data Warehousing	Sybase OA - Informix
Technical Consultants	OS/390/MVS/JCL
Functional Consultants	OA - I, 2, 11 & Datastar
Project Leaders	

COMSYS

information technology services

Pacific Northwest

IEF/Composer

Year 2000

COMSYS is a leader in the national IT market with over 4,000 consultants nationwide. Our strong ethics have led the Portland branch to 10 years of strong local market leadership & local success measured in double digits.

COMSYS Portland has various openings for experienced IEF/Composer consultants.

COMSYS offers a competitive compensation & benefits package. For immediate consideration, mail, fax or e-mail your resume to:

COMSYS Information Technology Services
10220 SW Greenburg Road, Suite 301,
Dept C, Portland, OR 97223.
Fax (503) 293-3098. Tele (503) 293-2499,
Toll free (888) 882-8326
Seattle Fax (425) 453-7174
Tele (800) 826-6797.
E-mail: jpatterson@comsysinc.com
Web: http://www.comsysinc.com

Equal Opportunity Employer

Tech it to the limit.

As more and more companies seek to become more cost efficient by outsourcing their IT requirements, the need for qualified, quality consultants increases. With over 27 years of experience, Ajilon is an ISO 9001 leading provider of the highest-quality information technology consulting services. Our consultants work with companies in virtually every industry, utilizing virtually every tool and technology.

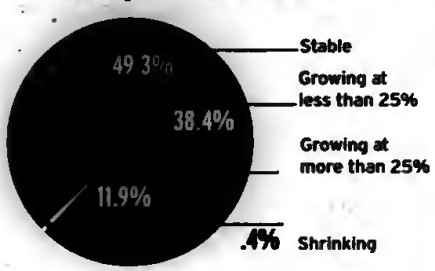
Our rapid growth has resulted in a wealth of challenging opportunities across the country for skilled IS professionals. We have recently acquired the company ProVision Technologies, which means opportunities in even more cities. Positions vary from Programmer Analysts to Systems Administrators. We invite you to find out how your skills can fit into one of our available openings.

We take pride in our accomplishments, as well as our talented people, and we provide comprehensive salary/benefit packages with multiple career paths. Please forward your resume to our National Recruiting Dept. or Fax: 1-800-798-2342 or
E-Mail: natldept@nrec.ajilon.com EOE

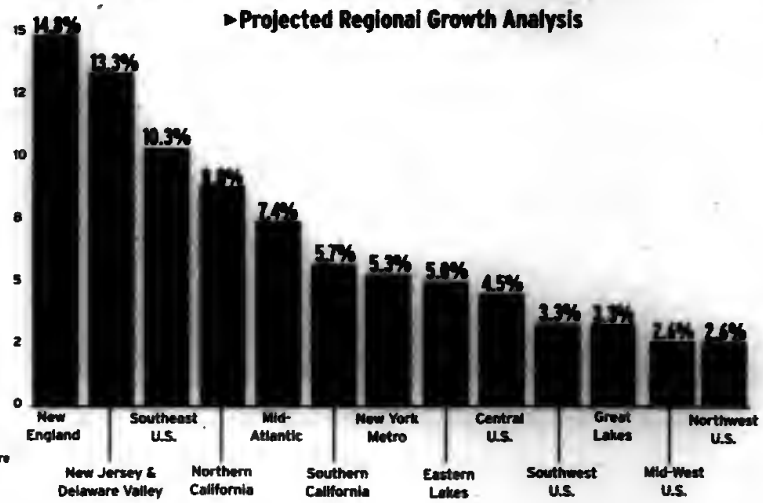
AJILON.
www.ajilon.com

CAREER SURVEY

▶Industry Hiring Trends
Overall growth rate: **6.2%**



Factory Automation
▶Projected Regional Growth Analysis



Survey Base: 276 Technology Firms involved in Factory Automation Software
Survey conducted between August '97 and October '97;

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 24,693 tracked firms with fewer than 1,000 employees.

© Copyright 1997, Corporate Technology Information Services, Inc., Woburn, MA

McDonald's

Means Opportunities.

ComputerWorld Magazine 1997 recognized McDonald's Corporation as one of the top 100 places to work in Information Systems

If you're ambitious, creative, and looking for a challenging career, look into joining the McDonald's team. There's a reason we're the leading global quick-service restaurant: it's our people

We currently have multiple positions available for:

Developers / Programmer Analysts

• ORACLE, PL/SQL, DEVELOPER 2K • LOTUS NOTES • VISUAL BASIC, ACCESS, WIN (3.1x, 95, NT) • COBOL, DB2/SQL, CICS • RPGIII, AS/400 • C/DOS

We encourage you to join us at

Additional positions.

Architects Project Managers Help Desk/PC Specialists

We offer excellent compensation and benefits including 90 hours/year budgeted IS training, educational assistance, bonus program, 401(k), profit sharing, stock options, sabbatical program, summer hours, major medical/dental, and much more.

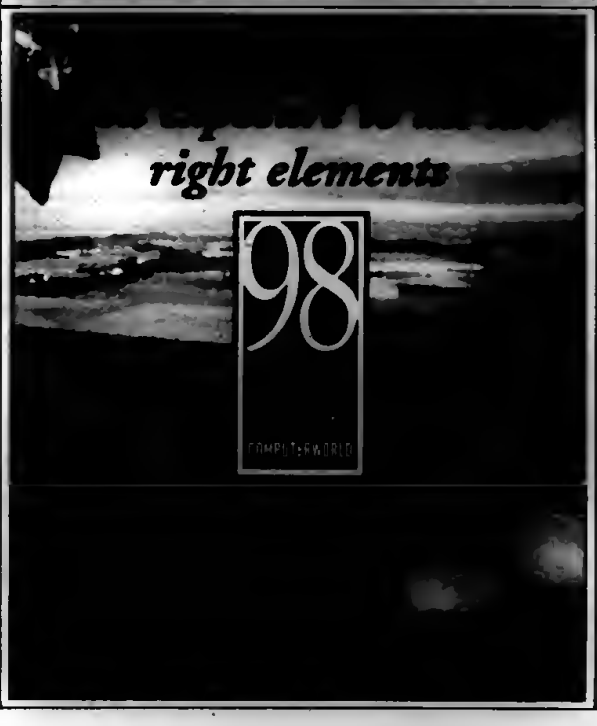
For more information, please **e-mail your resume to michael.power@mcd.com or fax your resume to (630) 623-5027.**

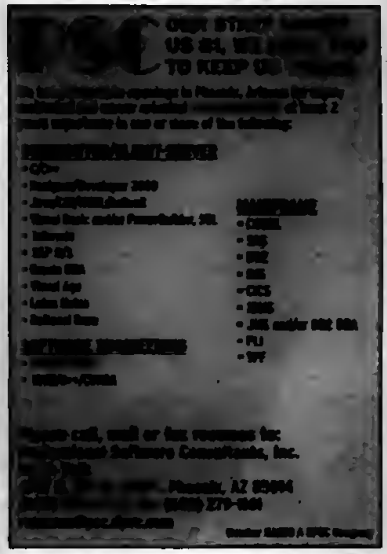
We take pride in hiring a staff as diverse as the world we serve. M/F/D/V

Visit our website at www.mcdonalds.com

IS Problems Got You Going In Circles? RHI Consulting Can Help.

*RHI*CONSULTING





Software Developer – Develop software applications using Borland Delphi2.0, Microsoft SQL, Microsoft Visual C++4.0, Oracle, Windows95, Windows NT. Duties are specialized in the area of life cycle development of client/server type software, including software system structure design, functionality design/implementation, GUI design/implementation, database design/implementation. Duties also include products' version control, software application installation, user training and ongoing support, submitting request for additional hardware and software with justifications. Req. Master in Computer Science plus 6 month exp. in job offered. Work 9:00am to 6:00pm. Salary $62,000/yr. Send two resumes to: Georgia Dept. of Labor, Job Order # GA6151727, 2943 North Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

Programmer. 40 hrs/wk. 9am-5pm $37,525/yr. Analysis, development & maintenance of programs for management information systems. Tools: AS/400, RPG/400; CL/400. *B.S. in Computer Science as well as 2 yrs. in job offered or Analyst Programmer required. (*1 yr. undergraduate edu + 3 yrs exp. as a programmer acceptable in lieu of B.S.) Previous exp. must include: AS/400; RPG/400. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605. Attention: Mary Miller. Reference #V-IL-16561-M. NO CALLS. An Employer Paid Ad.

Corporate America

Corporate America has a new look these days thanks to a *Fortune* 500 PC manufacturer from South Dakota. From a two-person start-up operation in 1985 to a $5 billion global company in 1996, Gateway 2000 has taken the PC industry *and* corporate America by storm.

Gateway 2000 Major Accounts, Inc. is there to handle the unique needs of large-volume purchasers. Gateway Major Accounts delivers Value of Ownership: the winning combination of high benefits and low cost for the life cycle of your computer. High-quality PCs custom built for your business that go to work for you right out of the box — that's Gateway.

Want to know more about this cow-spotted business phenomenon? Call our Gateway Major Accounts representatives today, because we mean business.

GATEWAY™ E-Series desktop and Gateway Solo™ portable PCs feature Intel Pentium processors.

MMX intel inside pentium II

GATEWAY2000

"You've got a friend in the business."®

888-888-0382

www.gateway.com/majoraccounts.htm

Gateway 2000 Major Accounts, Inc.
610 Gateway Drive • P.O. Box 2000
N. Sioux City, SD 57049-2000

GSA Schedule #GS-35F-4565G

© 1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, "G" logo, and "You've got a friend in the business" are registered trademarks, and GATEWAY and Gateway Solo are trademarks of Gateway 2000, Inc. The Intel Inside Logo, Intel and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Not all Gateway E-Series desktop PCs contain the Pentium II processor. Gateway Solo portable PCs do not contain the Pentium II processor. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc.

Marketplace

...rmation on
...ertising,
937-436-2005

Secure Only The Computers You Want To Keep

Secure-It, Inc. is a leader in computer security, having the highest quality and the largest selection of products to suit your needs. Our computer security staff is ready to assist you in solving your problem to minimize your risk. They can suggest an existing package, or assemble a special package just for you.

Secure your:

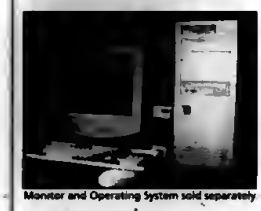
• Notebooks • Desktops • Peripherals • Internal Boards
• Disk Drives • CD Roms • Etc.

For a FREE consultation, or a FREE catalog ...
Call Today!
800-451-7592 Dept. CW

Secure-It

18 Maple Court, East Longmeadow, MA 01028, USA Phone: 413-525-7039 Fax: 413-525-8807
Dealer inquiries invited • Mastercard accepted

YOUR CHOICE



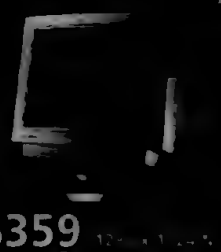
Monitor and Operating System sold separately

- 512k Pipeline Cache
- 32 Meg EDO Memory
- Mid Tower Case
- 2.0 Gig IDE Hard Drive
- 4Meg EDO Video
- 1.44 Floppy Drive
- 24x CD-ROM
- 16Bit Sound Card
- 60 Watt Speaker System
- Gooseneck Microphone
- 33.6 Fax/Voice Modem
- Mouse/pad
- Keyboard
- Platinum 10 CD Pack

INTEL PENTIUM 200 MMX OR AMD K6 200

$759.00

3 Year Warranty



$129 $179 $359

DXM Computer, Inc.
1 (800) dxm4usa • Fax 1(401) 434-0280
www.dxmusa.com
Complete spec's visit our web site

Sales & Rentals

✓ Upgrades
✓ New
✓ Reconditioned

http://www.dempseybus.com
e-mail: dempsey@dempseybus.com

Dempsey BUSINESS SYSTEMS
2136 Pullman Drive • Irvine, CA 92614-5504
Phone: (714) 475-2000 Fax: (714) 475-2019

Buy • Sell • Rent (800) 888-2000

For information on advertising, call 937-436-2005

Marketplace

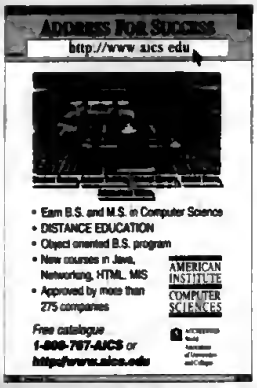
ALICOMP

Which has serviced over 185 diverse clients, specializes in providing VM, MVS, VSE service to clients who need:

- •OUTSOURCING
- •REMOTE COMPUTING
- •YEAR 2000: Mainframe Conversion Test Environment
- •TAPE CONVERSIONS
- •SYSTEMS PROGRAMMING & NETWORKING SUPPORT SERVICES

We are the "Boutique" of the Computer Services World

(201) 319-8787 • (800) 274-5556



NEED HELP WITH NT?

NT Admin. Services

ADMI EAM

1.888.NT.ADMIN

Remote Dial-In Services

- Unlimited access to world-class Microsoft Certified Professionals
- Expert-level skills at supporting Windows NT and BackOffice environments including:
  - MS Exchange
  - IIS
  - SQL Server

CALL
1.888.NT.ADMIN
EXT 239 (1.888 682-3646)

CALL
1.900.GET.NT.HELP
$3.95/min. (1.900.438-6843)

Microsoft Solution Provider

NetCom 3 Connectivity Without Clutter.

A product of engineered data products INCORPORATED
Linking People and Technology

HIGH READER TRAFFIC AREA

You are currently in a high reader traffic area as revealed by an analysis of Starch Readership studies. Your ad in Computerworld Marketplace will get you the readership results you need!

CALL (937) 436-2005, TO JOIN THE TRAFFIC JAM!

ADVERTISERS INDEX

Ace America ... 1, 70-71
http://www.ace.com

Allegiant Legacy Solutions ... 68
http://www.allegiant.com

American Power Conversion ... 119
http://www.apcc.com
888-289-APCC

Aurum Thoughts ... 64D*
http://www.aurum.com

BMC Software ... 23, 139, 141
http://www.bmc.com

Bull HN Information ... 84
http://www.bull.com

Candle ... 68
http://www.candle.com

Canon USA ... 30-31
http://www.canon.com

Cisco ... 56
http://www.cisco.com

Comdisco ... 80-81
http://www.comdisco.com

Comdisco SE* ... 3D
http://www.comdisco.com

Compaq Computer Corp ... 22-23, 66-67
http://www.compaq.com

Computer Associates ... 5, 18-19
http://www.cai.com

Dell ... 30-31
http://www.dell.com

Digital Equipment Corp. ... 40-41, 44-45
http://www.digital.com

EMC Corp. ... 102
http://www.emc.com

Executive Technology Summit ... 40
Fabrik ... 38
http://www.fabrik.com

Fortel ... 15
http://www.fortel.com

Fuji Photo Film USA ... 20
http://www.fujifilm.com

Gateway 2000 ... C1-C2a
http://www.gateway.com

General Signal Networks, Inc. ... 17
http://www.genet.com

Hewlett-Packard ... 25
http://www.hp.com

IBM ... 4B, 5I, 53, 64B-64C*, C4
http://www.ibm.com

IDG Net ... 109
http://www.idg.net

Imation ... 30
http://www.imation.com

Information Data Processing ... 9
http://www.

Intersystems Corp ... 25
http://www.interys.com

Kingston Technology ... 88
http://www.kingston.com

Lawson Software ... 65
http://www.lawson.com
(800) 477-1357

Lexmark ... 16
http://www.lexmark.com

Lotus Development Corp. ... 21-23
http://www.lotus.com
(800) 343-5414

MacDonic ... 64F
http://www.

MCI ... 103
http://www.mci.com

Mentorsoft ... 72
http://www.

Metro Fiber ... 15
http://www.

Micron ... 76
http://www.

Microsoft ... 26-27, 82
http://www.

Momentum Systems Ltd. ... 64H*
http://www.

NCR ... 87
http://www.
(800) CALL-NCR ext. 13000

NEC Technologies ... 31
http://www.

NEC USA ... 60-61
http://www.

Nortel North America ... 10
http://www.

Oracle Corp. ... 7
http://www.

Red Brick ... 82
http://www.

SAP America ... 34-35
http://www.

SAS Institute ... 84-85
http://www.

Storage Tek ... 79
http://www.

Sun Microsystems ... 2I
http://www.

Sybase ... 149
http://www.

Tandem ... 39-42
http://www.

Vignette ... 4B
http://www.

Visioneer ... C3
http://www.

Workstation Group ... 58
http://www.

Xerox ... 54-55
http://www.

* Enterprise Networking Select Edition

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

COMPUTERWORLD

President/CEO: Jim Martin
Vice President/Editor: Paul Gillin
Senior Vice President/Finance: Matthew C. Smith
Senior Vice President/Consumer Marketing: Gail Odeneal
Vice President/Recruitment Advertising: John Corrigan
Vice President of IS: Richard Broughton
Vice President/General Manager New Media & Information Mgmt: Richard Mikita
Vice President/Human Resources: Susan C. Perry

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: ☐ Home ☐ Business

Name

Company

Address

City State Zip

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (614) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address – COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701

Name
Title
Company
Address
City
State
Zip

SALES OFFICES

COMPUTERWORLD HEADQUARTERS: 500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

Senior Vice President/Publisher: Peter C. Weedfald
Vice President/Custom Publications: Elaine R. Offenbach
Vice President/Marketing: Cynthia L. Ahart

Regional Vice President North/Central: Sherry Driscoll
Regional Manager East: Christopher E. Thomas
Vice President/Associate Publisher West: Bill Howard
National Director Business Development: John Gordon
National Director Channel Sales: Lisa P. Caldwell

NORTH/CENTRAL

Director: Isabelle Kane; Senior District Manager: Kim DiMascio, District Manager: Laune Marinone; Account Executive: Dianne McNeil; Sales Associates: Karen Beasley, Cheryl Stratton, 500 Old Connecticut Path, Framingham, MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

Sr. Account Executive: Laurie Gomes; Sales Associate: Jasmine Huffman, 875 N Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 Fax: (312) 943-2214

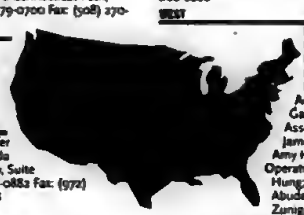
Senior District Manager: Jennifer Hedges; Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TDD: (800) 822-4918

EAST

Director: Fred LoSapio; Senior District Manager: Walter Hodge; District Managers: Kim Bailey, John Bosso, Account Executive: Maureen Grady; Sales & Office Associate: Susan Kusnic; Sales Associates: Jean Dellarybba, Erica Driscoll, Valerie Lusczek, John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

Senior District Manager: Walter Hodge, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

WEST



Director: Ernie Chamberlain, District Managers: Aimee Einstein, Angela Flores, Denyce Kehoe; Sr. Account Executive: Claude Garbarino; Account Executives: Larisa Gagarins, Andrea Zurek; Sales Associates: Bonnie Jo Bouchard, James Dunn, Alicia Giovannini, Amy Hudson, Nipool Patel; Operations Coordinator: Emyne Hung; Office Services: Jessica Abude; Sales Coordinator: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (650) 347-0555 Fax: (650) 347-8312 TDD: (800) 900-3179

Senior District Manager: Cindy Wager; Account Executive: Robert Pietsch; Sales Associate: Pat Dubl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 Fax: (714) 476-8724

ADVERTISING OPERATIONS PRINT & ON-LINE

Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508) 879-0700 Fax: (508) 879-0446

INTERNATIONAL DATA GROUP

Chairman of the Board: Patrick J. McGovern
President: Kelly Conlin
Chief Operating Officer: Jim Casella

IDG

Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 275 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month.

"HP is reselling PATROL® technology and products because of the tight integration BMC Software is delivering through the HP OpenView enterprise solutions. Together, HP OpenView and PATROL provide the highly desired complementary functionality that our customers need today in the areas of application and data management."

PATROL

Johnnie-Mike Irving, General Manager HP Professional Services Organization for the Americas

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software, Inc. or the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997 BMC Software, Inc. All rights reserved.

The Week in Stocks

Gainers

PERCENT

Mobile Corp.	22.1
Compaq Computer Corp.	15.6
Sequent Computer Sys.	12.3
MCI Communications Corp.	12.0
Sybase Corp.	11.5
DSC Corp.	11.4
Network Corp.	7.4
Symantec Corp.	7.0

DOLLAR

Ameritech Corp.	4.38
EMC Corp.	4.06
Sprint Corp.	3.69
MCI Communications Corp.	3.63
Hewlett-Packard Co.	3.56
Network Corp.	3.50
MCI Communications Corp.	3.44
Computer Horizons	3.38

Losers

PERCENT

Micrografx Inc.	46.9
Informix Corp.	43.8
Cascade Communications Corp.	43.8
Ascend Communications Inc.	43.8
Cisco Systems Inc.	43.8
Computer Horizons Corp.	43.8
Network Corp.	43.8
Network Corp.	43.8
Network Corp.	43.8
Network Corp.	43.8

DOLLAR

Ameritech Corp.	4.38
EMC Corp.	4.06
Sprint Corp.	3.69
MCI Communications Corp.	3.63
Hewlett-Packard Co.	3.56
Network Corp.	3.50
MCI Communications Corp.	3.44
Computer Horizons	3.38

INDUSTRY ALMANAC

Yahoo! Stock gets hot

After it was initially dismissed by some market watchers, one of the World Wide Web's best-known brands is slowly turning heads and opinions in its direction.

Yahoo, Inc. (Nasdaq:YHOO) has long been a Web byword and, as an encyclopedic search engine, has provided many Internet users with their first reliable Internet signpost.

But that wasn't enough to impress some Wall Street analysts when the company first went public in April 1996. One analyst who attended a presentation to drum up interest in Yahoo's initial public offering recalls being amused by the flash and dazzle — yet still walking away wondering how serious the company could be when its top executive had the title "Chief Yahoo."

But that perception has changed. Keith Benjamin, an analyst at BancAmerica Robertson Stephens, a San Francisco-based investment house, says he is "increasingly impressed by Yahoo's fundamental momentum." Yahoo will continue to be a prime beneficiary of advertisers and electronic retailers that are spending more money on the Web, he says.

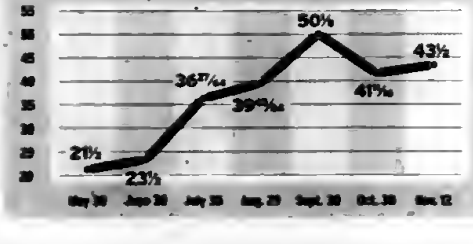
Yahoo was ranked as the Internet's most-visited site in October, with 17.2 million visitors. The hits outpaced Yahoo's closest rival search engines — Excite, Inc. and Excite's Web-Crawler — in a poll conducted by Relevant Knowledge, Inc. in Atlanta.

"Yahoo is way out in front of its competitors," says Paul Noglows, an analyst at Hambrecht & Quist, Inc. in San Francisco. "What they're trying to do now is to take their user base and transform it into a member base." Yahoo hopes to do this by encouraging users to sign up for the free personalized information service or by giving them the tools to follow stock portfolios with the Yahoo Finance service, he says.

Yahoo also has been very financially sound, Noglows says. Yahoo is still the only search engine company posting profits — several quarters in a row now — and its revenue this year has more than doubled compared with last year's. — Stewart Deck

REVVED UP YAHOO

Except during the market's October dip, Yahoo's stock price has been rising on steady profits and growth



Exch	52 Week Hi	52 Week Lo		Nov 14 2wp	Wk Net Change	Wk Pct Change
COMS	91.39	24.50	3 COM Corp	31.88	6.63	17.3
AIT	72.75	54.75	Ameritech Corp	72.75	9.13	8.2
ASND	80.25	22.63	Ascend Communications (L)	24.81	1.00	4.2
T	50.94	30.75	AT & T	46.94	1.94	4.1
BNYN	6.50	1.19	Banyan Systems Inc	1.25	-0.03	-1.0
BAY	41.38	15.39	Bay Networks Inc	30.94	3.69	11.3
BEL	95.25	56.75	Bell Atlantic Corp	84.00	3.38	4.2
BLS	51.38	38.72	BellSouth Corp	51.38	4.50	9.6
BRKT	54.59	9.25	Berkshire Hi-Tech Technology	17.75	-0.25	-1.0
CS	46.59	25.81	Cabletron Systems	27.88	-0.63	-2.2
CCRN	51.88	8.67	Centigram Communications	15.63	1.25	-3.4
CSCO	86.41	45.25	Cisco Systems Inc	81.31	1.13	1.4
CMNT	7.00	3.31	Computer Network Tech.	4.38	0.00	1.4
DIGI	32.75	13.90	DSC Communications	23.38	2.31	9.1
FORE	42.50	10.00	FORE Systems Inc	19.00	1.25	7.5
GDC	12.38	5.38	General Datacomm Indu	5.50	-0.44	-7.4
GSX	52.00	56.13	General Signal Networks	40.25	1.18	3.3
GTE	52.25	40.50	GTE Corp	46.38	1.88	2.1
LU	80.75	49.75	Lucent Tech	81.69	1.25	1.5
MADGF	16.13	4.56	Madge Networks NV	5.63	-0.25	-4.2
MCIC	48.38	27.31	MCI Communications Corp	41.88	6.44	13.6
NETM	8.50	2.50	NetManage Inc	3.03	-0.22	-6.5
NTRX	7.50	1.44	Netrix Corp	1.69	0.25	12.9
NCDI	16.21	7.38	Network Computing Devices	8.25	-0.19	-2.2
NWX	22.19	11.25	Network Equipment Tech	14.94	1.19	7.4
NETG	50.25	11.12	Network General	19.69	1.50	5.0
NN	69.19	30.50	Newbridge Networks Corp	46.38	5.44	5.5
NT	112.38	57.75	Northern Telecom Ltd	80.06	1.75	1.9
NOVL	12.38	6.28	Novell Inc	9.00	-0.06	-0.5
ODSI	19.25	8.19	Optical Data Systems Inc (L)	9.12	-0.88	-8.8
PCTL	23.50	7.94	Picturetel Corp	9.25	-0.56	5.5
PTON	6.25	1.21	Proxicom Inc	1.75	-0.25	12.5
94CO	5.50	1.00	Racotek Inc	1.31	-0.13	9.7
RETX	9.25	3.00	Retix	4.69	-0.06	1.3
SBC	97.94	48.38	SBC Communications (H)	67.94	4.88	7.2
SFA	24.94	16.25	Scientific Atlanta Inc	19.38	0.38	0.3
SMVA	50.11	6.25	Shiva Corp	9.75	-0.88	-3.7
SOH	57.75	57.50	Sophus Corp	51.75	5.94	11.5
SMSC	10.12	9.25	Standard Microsystems Corp	11.38	-0.44	-3.8
USW	42.81	50.00	US West Inc (H)	42.81	0.81	2.0
XIRC	31.13	7.50	Xircom	9.88	-0.44	-4.4
XYLN	44.00	12.38	Xylan Corp	16.69	-0.96	3.3
AAPL	29.56	12.75	Apple Computer Inc	15.31	1.88	5.5
CPQ	79.56	26.88	Compaq Computer Corp	63.94	0.18	0.0
DELL	103.88	22.00	Dell Computer Corp	79.38	0.94	1.2
CJTW	46.25	19.00	Gateway 2000 Inc	40.69	0.88	1.5
HWP	72.94	47.75	Hewlett-Packard Co.	51.25	-0.50	0.8
IMUEI	25.39	12.38	Micron International Inc	14.00	0.19	1.4
NIPNT	79.38	43.50	NEC America (L)	50.50	-2.75	5.2
SGI	30.31	12.93	Silicon Graphics	13.38	-0.38	2.3
SUNW	53.37	25.50	Sun Microsystems Inc	32.63	-2.75	5.5
DGN	17.94	13.63	Data General Corp	17.94	1.91	9.2
DEC	57.81	25.38	Digital Equipment Corp	48.81	1.75	5.5
IBM	189.44	62.63	IBM	181.88	2.25	2.3
MDDD	8.15	2.88	Meridian Data Inc	4.31	-0.11	2.8
PNCN	30.13	3.38	ProCom Technology Inc	25.50	0.38	2.3
SQNT	31.25	16.50	Sequent Computer Sys	25.31	2.50	12.3
TERM	8.88	2.06	Sequoia Systems Inc (H)	4.75	0.25	5.6
SRA	38.75	23.50	Stratus Computer Inc	32.38	1.25	3.7
UIS	16.50	5.75	Unisys Corp	14.13	0.31	2.3
ADSK	53.17	34.50	Adobe Systems Inc	46.31	0.91	1.7
AMSWA	15.63	4.62	American Software Inc	11.38	1.00	9.3
APLX	26.50	2.12	Aplix Inc	6.75	-0.13	4.4
ARSW	53.25	17.50	Arbor Software	31.88	-4.13	11.5
ADSX	51.13	21.38	Autodesk Inc	35.75	1.88	5.0
BCSS	38.38	22.50	BCS Systems Inc	32.50	1.25	3.6
BMCS	69.50	50.63	BMC Software Inc	60.13	0.75	1.3
BOOL	55.25	18.75	Boole and Babbage	29.63	-0.88	5.3
BORL	11.63	5.31	Borland Int'l Inc (H)	10.94	0.38	3.6
BOBJY	18.75	6.92	Business Objects	11.00	0.38	3.5
CAYN	4.25	2.00	Cayenne Software Inc	2.78	-0.00	2.3
CNTR	5.38	1.12	Centura Software	2.50	-0.31	55.2
CHKPF	50.50	15.63	Checkpoint Software Technologies	48.75	0.75	1.5
COGNF	39.50	20.00	Cognos Inc	30.75	1.13	-5.1
CA	61.94	27.25	Computer Associates	51.75	1.69	2.3
CVN	10.38	1.94	Computervision Corp	3.00	0.00	0.0
CPWR	26.63	12.13	Compuware Corp	13.25	1.00	5.0
CSRE	19.38	6.50	Consumer Inc	6.69	-0.00	-0.9
COSFF	9.69	2.66	Cosoft Corp	5.81	-0.15	-4.3
DWTI	6.53	2.25	Datawatch Technologies Inc	5.35	-0.44	-12.3
FILE	36.50	8.50	Filenet Corp	25.63	0.75	3.0
FRTE	40.75	5.25	Fourth Software	10.25	1.00	9.4
FTPS	8.63	2.56	FTP Software Inc	2.75	-0.19	-6.4
HUMCS	54.25	27.00	Hemmpacland Comm Ltd	35.25	-0.88	2.4
HYSW	38.50	13.00	Hyperion Software Corp (H)	29.94	2.06	3.4
IIRC	20.38	7.12	Information Resources	16.13	0.13	0.8
IFMXE	27.63	5.63	Informix Corp	6.38	0.21	4.2
INGR	14.19	6.25	Intergraph Corp	20.00	0.00	0.0
LEAF	5.88	0.81	Interleaf Inc (H)	3.50	-0.06	1.8
ISLI	18.50	8.25	Intersolv Inc	15.56	-0.81	-6.1
INTU	40.25	20.88	Intuit Inc	30.50	0.50	1.7
TLC	20.50	5.50	Learning Co (The)	19.50	9.00	0.0
LGWX	12.88	4.12	Logic Works	9.75	0.75	9.4
MAPS	12.63	2.88	Mapinfo Corp	11.75	2.13	22.1
MATH	5.73	0.19	MathSoft	3.56	-0.13	3.6
MCAF	28.50	20.50	McAfee Associates	48.38	-4.31	-8.2
MENT	15.13	6.50	Mentor Graphics	10.00	0.00	0.0
MFCY	29.12	52.25	Micro Focus	34.00	-0.13	-0.9
MCRJ	10.63	4.00	Microgate Inc (H)	9.38	-0.38	-3.8
MSFT	156.75	70.75	Microsoft Corp	132.00	2.75	9.1
OBJS	5.19	0.75	Object Design, Inc (L)	0.97	0.09	3.3
ORCL	42.12	23.50	Oracle Corp	34.63	-0.56	1.7
PARTC	94.25	23.50	Parametric Technology	49.19	2.12	0.0
PSFT	68.63	30.63	Peoplesoft	64.13	-0.25	0.4
PTEC	19.75	11.00	Phoenix Technologies	14.88	-0.50	3.5
PSQL	11.75	6.50	Platinum Software	9.38	1.38	14.1
PLAT	28.88	10.25	Platinum Technology	25.63	0.25	1.0
PRGS	29.25	12.63	Progress Software Corp	21.75	0.63	3.0
RNBO	20.12	13.75	Rainbow Technologies Inc	23.75	0.75	3.3
REDB	38.50	5.00	Red Brick Systems Inc	7.34	-0.41	5.2
ROSS	9.75	1.75	Ross Systems, Inc	1.75	0.00	0.0
SAPE	61.38	50.00	Sapient Corp	51.25	1.75	3.3
SCOC	8.81	5.12	SCO Inc	5.75	0.12	2.3
SDTI	36.50	21.00	Security Dynamics Tech	34.63	2.00	0.3
SDTB	17.63	6.88	State of the Art	15.12	-0.38	-2.9
SSW	16.75	27.25	Sterling Software Inc	34.63	0.23	0.7
SDRC	38.00	56.63	Structr Dynamics Research	10.94	0.25	1.9
SYBS	25.63	12.13	Sybase Inc	15.81	0.71	0.8
SYMC	25.75	51.75	Symantec Corp	23.63	2.06	9.6
SNPS	48.75	21.75	SynOpsys	37.88	1.63	-4.1
SSAX	17.63	1.38	System Software Assoc	11.50	1.50	0.5
SYSF	10.75	6.00	Systemsoft Corp	7.15	-0.25	2.4
TRUV	5.19	1.38	Truevision Corp	3.25	-0.25	7.1
VIEW	27.50	9.25	Viewlogic Systems	24.13	1.15	-4.5
VNRS	15.75	5.75	Visions Software Inc	8.88	-0.88	11.3
WALK	10.38	10.50	Walker Interactive Systems	12.75	-0.63	-4.3
WALL	10.12	12.75	Wall Data Inc	15.13	-0.63	-4.0
WANG	25.38	16.38	Wang Laboratories Inc	22.35	-0.25	7.1
AMZN	80.00	15.75	Amazon.com	48.50	3.50	10.2
AOL	91.13	26.50	America Online	74.44	5.56	-7.0
ATHM	60.63	56.63	At Home Corp	19.50	3.00	12.3
CSRV	10.56	8.88	Computerserve Corp	12.38	-0.50	-4.0
EDFY	22.13	6.88	Edify Corp	17.78	1.00	5.6
EXCF	73.00	3.50	Excite Inc	26.25	-0.75	-2.8
SEEK	14.50	4.38	Infoseek Corp	11.31	1.25	10.0
LCOS	42.38	9.50	Lycos Inc	31.50	2.25	7.7
NETC	21.38	5.90	Netcom On-Line	18.00	-0.44	2.2
NSCP	69.50	23.00	Netscape Comm. Corp	31.38	1.63	-5.0
OMKT	20.25	6.50	Open Market Inc	11.38	0.00	0.9
PSIX	14.00	5.50	PSINet	8.29	1.47	18.5
QDEX	5.31	2.38	Quadrotex Corp	2.22	-0.28	11.3
RAPT	29.00	8.38	Rapid Systems	52.38	-0.69	-5.0
SCUR	14.81	4.75	Secure Computing Corp (H)	11.38	1.63	12.0
SPYG	19.38	6.00	Spyglass Inc	7.94	-0.56	-6.9
YHOO	38.63	33.38	Yahoo! Inc	48.38	1.75	-3.5
AMD	30.38	2.88	Advanced Micro Devices	20.69	1.81	-8.1
ADI	36.38	20.63	Analog Devices Inc.	29.81	-0.94	-3.0
CMPS	28.50	5.38	Chips and Technologies	15.50	-0.31	-2.0
CRUS	21.38	8.00	Cirrus Logic	14.50	-0.88	-5.5
CY	18.94	25.12	Cypress Semiconductor Corp.	11.25	-0.19	1.6
CYRIX	35.00	57.13	Cyrix	56.81	5.81	-9.3
INTC	102.00	56.88	Intel Corp	78.63	3.38	4.2
LSCC	29.38	18.38	Lattice Semiconductor	23.75	-0.19	-0.3
LSI	46.38	28.63	LSI Logic Corp	25.38	0.19	0.5
MCRL	46.38	17.25	Micrel Semiconductor Inc	24.88	0.38	1.1
MU	30.88	21.63	Micron Technology (L)	23.38	2.88	10.7
MOT	80.50	30.75	Motorola Inc	64.69	2.94	4.8
NSM	42.38	30.38	National Semiconductor	32.63	5.94	-0.8
TXN	142.50	53.50	Texas Instruments	40.38	-14.94	53.4
VLSI	18.88	14.88	VLSI Technology	20.69	0.94	3.2
XLNX	50.50	29.38	Xilinx (L)	51.25	0.44	1.3
ZLG	28.88	15.00	Zilog Inc	18.56	-0.31	-3.6
ADPT	54.25	30.13	Adaptec Inc	46.75	3.25	-6.5
APCC	33.88	15.25	American Power Conversion (H)	21.75	-0.06	-0.2
CREAF	10.75	5.50	Creative Technology Ltd. (H)	27.75	1.00	3.7
RACE	28.50	4.56	Data Race Inc (L)	5.50	0.12	2.3
DTM	12.00	7.38	Dataram Corp	8.75	-0.50	-5.4
EMC	60.13	27.75	EMC Corp.	52.88	6.00	10.8
EMLX	21.25	10.13	Emulex Corp	15.00	-2.00	-11.8
ESCC	32.00	27.00	Evergreen Superelerants	51.25	0.56	7.9
EXBT	15.00	6.00	Exabyte	10.88	-0.00	-0.6
HSLF	2.63	0.94	Intelligent Info. Systems	1.70	0.00	0.0
IOM	30.12	14.13	Iomega Corp	29.13	2.25	4.3
IPLS	2.81	0.94	IPL Systems Inc	1.88	0.13	7.1
KMAG	30.75	15.31	Komag Inc	19.63	0.75	4.0
MTSI	34.38	17.13	Micro Touch Systems Inc	21.25	-0.88	-4.0
MTIC	17.00	2.25	MTI Technology Corp.	12.94	0.15	1.6
PNCL	2.81	0.59	Pinnacle Micro Inc	0.66	0.00	0.0
AQM	23.00	2.38	QMS Inc	6.88	0.15	4.5
QNTM	43.25	15.00	Quantum Corp.	29.75	-0.88	-2.9
RDUS	1.50	0.19	Radius Inc	0.50	-0.03	-5.3
SEG	30.25	20.94	Seagate Technology (L)	25.38	-1.25	-4.5
SDS	19.50	7.75	Storage Computer Corp (L)	8.38	0.13	1.5
STK	60.38	33.25	Storage Technology (H)	61.25	0.13	0.2
TEK	30.38	19.88	Tektronix Inc	20.69	-0.56	-1.4
WTIC	54.75	19.63	Western Digital Corp (L)	22.75	-1.31	0.5
XIRC	30.63	10.50	Xircom Corp	23.75	-2.88	-3.0
AMSY	27.15	15.75	American Mgmt Systems	21.38	0.21	1.5
ANLY	30.75	21.25	Analysts Int'l	45.00	-0.06	-0.1
AUTO	57.00	28.56	Auto Data Processing (H)	57.50	3.37	6.2
BOMI	30.63	10.75	BDM International Inc	20.31	-0.44	-2.1
CATP	40.75	21.25	Cambridge Tech. Partners	30.13	-0.94	-2.4
CEN	49.50	29.50	Cerner Corp.	42.38	1.88	4.8
CIBO	54.00	12.38	Cibronics Inc.	29.00	-1.63	-5.5
CPU	57.23	53.25	CompUSA Inc.	55.75	2.81	5.3
CHRZ	39.63	16.75	Computer Horizons	32.50	8.88	35.6
CSC	80.50	57.00	Computer Sciences	75.81	0.94	1.3
TSK	49.38	26.94	Computer Task Group	29.38	-0.69	-2.3
EGGS	11.13	3.63	Eggland Dietjoint Softwares	8.69	-0.69	-7.3
EDS	30.38	29.50	Electronic Data Systems Corp.	38.12	0.38	1.3
ICO	40.69	19.75	Unicom Corp	31.50	1.23	4.1
INEL	8.75	2.25	Intelligent Electronics	4.94	0.19	3.9
KEA	39.00	12.38	Keane Inc.	29.13	2.88	5.1
MICA	28.75	12.31	Micropro Int'l	25.38	0.50	2.2
PAYX	41.38	25.63	Paychex	39.94	0.19	0.5
PMS	94.94	35.75	Policy Management Sys	63.38	5.38	5.8
REY	30.63	13.75	Reynolds and Reynolds	17.69	-0.63	-3.4
SCBI	30.50	18.75	SCB Computer Tech Inc.	18.00	-1.38	-6.5
SEAC	44.50	18.75	SEI Corp.	42.50	0.38	0.9
SIMS	94.63	80.75	Shared Medical Systems	38.63	4.56	5.8
SSPE	23.38	10.00	Software Spectrum Inc	14.00	0.00	0.0
SDS	29.13	16.00	Surgical Data Systems	25.69	1.25	5.5
VSY	28.25	6.00	Vanstar Corp.	12.50	-0.56	-4.3

KEY (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International, Inc., Boulder, Colo.
This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and Computerworld assume no liability for inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

NT Workstation luring users

CONTINUED FROM PAGE 1

that the additional hardware requirements for NT Workstation weren't a deterrent. "Our standard desktop configuration is 32M bytes and at least a 2G-byte hard drive," he said.

Last year, Microsoft shipped nearly 2.3 million copies of NT Workstation, representing 3% of desktop operating systems, according to International Data Corp. (IDC) in Framingham, Mass. That's expected to reach 24 million units — nearly 20% market share — by the year 2000.

"That's a 937% increase from 1996, which is huge. Windows 95/98 growth rate during the same period will rise 87%," said Brian McDonough, an IDC analyst. "Windows 95/98 will remain strong. But Microsoft is aggressively repositioning Windows NT Workstation to be *the* business platform of choice, and users will take heed."

Although it won't supplant Windows 95/98 as the dominant business desktop for years to come, NT Workstation will account for one-third to one-half of all new business operating system shipments by the year 2000, said Jonathan Roberts, Microsoft's Windows 95/98 and Windows NT Workstation director.

But some users are hedging their bets.

Jim Marshall, an information delivery security consultant at Dow Chemical Co. in Midland, Mich., said that based on security considerations, he would rather see his 35,000 users on the NT Workstation platform vs. Windows 95. But he said the ultimate decision will be driven by timing. "The issue for us is how long after Windows 98 ships will NT Workstation 5.0 ship. If it's too long, we won't wait. We can't let the rest of the world move on while we hang back," Marshall said.

Jeff Dazell, a LAN network services administrator at Dana Corp. in Toledo, Ohio, said NT Workstation will predominate in his firm, but not immediately. "Right now, it's difficult for many of our divisions to justify the expenditure of moving to [NT Workstation] when Windows 95 is working just fine," he said. But, Dazell added, "as the leases end on our current desktop machines, all the new machines we buy will run Windows NT Workstation." □

Exchange 5.5 saves on servers

CONTINUED FROM PAGE 1

number of Exchange servers would significantly lower administrative costs. "Most of the costs of administration are not in the servers," said Bob Lewin, an analyst at Dataquest in San Jose, Calif. He said Exchange's lack of an enterprise-scale directory and graphical administration tools means sites will continue to grapple with administration.

SAVINGS EXPECTED

Administrators at one 60,000-user Exchange site said they expect to eliminate about half of the site's 150 Exchange servers as a result of the upgrade, which the company estimates could cut administration costs by as much as a third.

Sites that have built highly distributed messaging networks probably aren't set up to consolidate Exchange 5.5 servers, users pointed out.

"Consolidating servers is a possibility, but it won't be a dramatic reduction, because of the way we have structured our [Exchange network]," said Bob Cavallaro, director of advanced technology at American International Group (AIG). The New York-based insurer already has centralized public folders and uses separate servers to run E-mail. The increased server headroom may keep AIG from adding more E-mail servers, Cavallaro said.

Several sites said they plan to reduce the number of mail servers they run but are waiting for improved clustering support to be added to Exchange before they do so. Microsoft is expected to provide that functionality in the next release, code-named Platinum, due in the middle of next year.

"If you are going to have a lot of users running on each server, you want to make sure the server is extremely reliable," said Bob Winterton, systems specialist at Consolidated Edison Company of New York, which is moving 10,000 users from Microsoft Mail and IBM Professional Office System to Exchange. Clustering will add the level of reliability that ConEd is looking for, he explained.

In the meantime, Exchange 5.5 means the utility can relax some of the limitations it has imposed on E-mail users now that storage isn't an issue, Winterton said. □

CA eyes remote PC management

By Patrick Dryden

COMPUTER ASSOCIATES International, Inc. this week will expand the PC control capability of its enterprise management suite at Comdex/Fall '97 in an effort to reduce support hassles for users and increase acceptance by vendors.

CA plans to post a free upgrade to the framework version of Unicenter TNG, a subset of the full suite that several system vendors bundle with servers to enable some basic management functions.

Hoping to snare similar bundling deals with PC makers, CA will enable the Unicenter TNG framework version to start new PCs equipped with "wake-up" triggers in the motherboard and network interface. Then central operators could apply automated tools to configure, control or upgrade remote PCs, even if users shut them down at night.

"I applaud any effort to build management in at the factory, because the capability must be pervasive to make a significant change," said Jonathan Eunice, an analyst at Illuminata, Inc. in Nashua, N.H.

Intel Corp. and some PC vendors are expected to announce plans to provide CA's framework software.

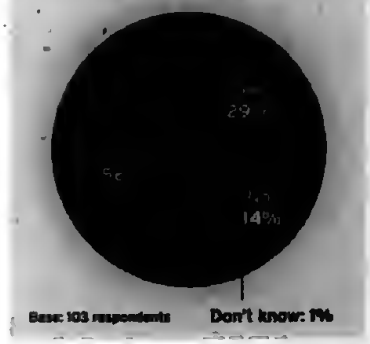
CA last week announced plans to add remote-control capabilities to all its management products when it acquired privately held Avalan Technology, Inc. in Holliston, Mass., for an undisclosed amount.

Avalan's Remotely Possible software can control Windows PCs across a network or modem connection. CA will add this to its ARCserve backup and InocuLAN virus protection tools. CA also will offer remote-control options for Unicenter TNG and Paradigm Service Desk. □

Comdex Snapshot

Trade shows make the grade

Compared with a year ago, do you find trade shows more useful?



Source: Computerworld, Framingham, Mass.

Intel

Corp. is integrating PATROL® management technology into the i960RP I/O processor in order to provide the direct management capabilities for I/O subsystems customers are asking for.

PATROL

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software, Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997 BMC Software, Inc. All rights reserved.

How to contact Computerworld

TELEPHONE/FAX

Main phone number ..... (508) 879-0700
All editors unless otherwise noted below
Main fax number ..... (508) 875-8931
24-hour news tip line ..... (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.
All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.
Please include your address and telephone number

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone ..... (800) 552-4431
E-mail ..... circulation@cw.com.
Back issues ..... (508) 820-8129

REPRINTS/PERMISSIONS

Phone ..... Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS/NEWS

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

SENIOR EDITORS/NEWS

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (914) 332-9630
IS careers, social issues Julia King (610) 532 7599
Investigative reports Kim S. Nash (773) 871 3035
Mainframes, high-end storage Tim Ouellette (508) 820-8215
Databases Craig Stedman (508) 820-8120
Midrange hardware, Unix, systems integration Jaikumar Vijayan (508) 820-8220
Internetworking Bob Wallace (508) 820-8214
Intranets Carol Sliwa (508) 628 4731

SENIOR WRITERS/NEWS

@Computerworld Stewart Deck (508) 820-8155
PCs, careers, net computers April Jacobs (508) 820-8121
Security, federal government Sharon Machlis (508) 820-8231

STAFF WRITERS/NEWS

New products, multimedia, low-end storage Nancy Dillon (650) 548-5538
Mobile computing Kim Girard (650) 548-5515
Telecommunications Matt Hamblen (508) 820-8567
@Computerworld Patrick Thibodeau (508) 820-8143
PC software, application development Gordon Mah Ung (650) 548-5512
Client/server software, Unix applications Randy Weston (508) 628-4868
@Computerworld Wylie Wong (650) 548-5581

OPINIONS

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
West Coast bureau chief Frank Hayes (503) 252-0100

DEPARTMENT EDITOR/FEATURES

Technology reviews/ Buyer's Guide James Connolly (508) 820-8144

SENIOR EDITORS/FEATURES

Managing Allan E. Alter (508) 620-7714
Special reports Gary H. Anthes (202) 347-0138
Features writer Kevin Burden (508) 620-7717
Buyer's Guide Cathleen Gagne (508) 620-7729
Management Robert L. Scheier (508) 628-4931
In Depth Steve Ulfelder (508) 820-7745
IT Careers David@ Weldon (508) 820-8166

ASSOCIATE EDITORS/FEATURES

Buyer's Guide Amy Malloy (508) 620-7754
Managing Rick Saia (508) 820-8118

IDG NEWS SERVICE CORRESPONDENTS

Paris bureau chief Jeanette Borzo (33) 1-4904-8000
UK correspondent Kristi Essick (44) 171-416-0701

RESEARCH

Bob Fink, senior research manager (508) 820-8114; Laura Hunt, research analyst; Stefanie McCann, senior graphics coordinator; Mari Keefe online researcher

COPY DESK

Ellen Fanning, managing editor (508) 820-8174; Roberta Fusaro, assistant managing editor; Christine Aicardi Maguire, Jamie Eckle, David Ramel, senior copy editors; Michelle Davidson, senior production copy editor; Pat Hyde, Monica Sambataro, Kevin Shea, copy editors; Jeremy Selwyn, senior online copy editor

GRAPHIC DESIGN

Tom Monahan, design director (508) 820-8218; Jamell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Rowal, senior graphic designer; Carol Lieb, photo researcher/editor; Alice Goldberg-FitzHugh, Amira Haram, April O'Connor, graphic designers; Rich Tennant, John Klossner, cartoonists

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178); Lorraine Witzel (ext. 8139); Belkis Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (650) 548-5563

COMPUTERWORLD MAGAZINES GROUP

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCreary, Joyce Chutchian-Ferranti, managing editors; Kimber Lee A. Smith, assistant managing editor and online coordinator; Mary Beth Welch, art director

COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.
Contact: Johanne Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp. 8,49,63,114
@Net Group, Inc. 85
Aavantage Group, Inc. 6,33
Adaptec, Inc. 106
ADP Dealer Services 83
Advanced Manufacturing Research, Inc. 47
AEM Management Group, Inc. 57
AJM Professional Services 114
Allegiance Healthcare Corp. 83
Allstate Insurance Co. 24
Ameritrade Century Investments 114
Ameritrade Express Corp. 14
American International Group 1
Ameritrop PLC 57
Andersen Consulting ..... Cover 1
Agentus Technologies, Inc. 85
Apple Computer, Inc. 3,33
Aramark Uniform Services, Inc. 63
Arbitration Forums, Inc. 100
Aranta Technologies, Inc. 63
Associated Communications LLC 114
AT&T Corp. ..... Cover 1,14,33,47,57
Ato Associates, Inc. 83
AutoGen Systems, Inc. 104
Avalon Technology, Inc. 139
Baer Amorico Robertson Stephens 138
Bank of America Corp. 69
Barnes & Noble, Inc. 142
Baxter International, Inc. 83
Bay Networks, Inc. 2,63
BEA Systems, Inc. 69
Bolzac Engineering Group, Inc. 63
Bell Atlantic Corp. 12
Bellcore 62
Bluestone Software, Inc. 69
Borders Group, Inc. 142
Bristol-Myers Squibb Co. ..... Cover 1,47
British Telecommunications PLC 33
Burlington Coat Factory Warehouse, Inc. 16
Bus-Tech, Inc. 77
Business Objects, Inc. 83
Business Software Alliance 114
Cabletron Systems, Inc. 2
Carleton Corp. 85
Casio Computer Co. 16,78
Chevron Information Technology Co. 7
CIMI Corp. 33,63
CIO Communications 2
Cirrus Logic, Inc. 114
Cisco Systems, Inc. 49,63,114
Cloudscape, Inc. 69
Comcast Cable Communications, Inc. 20
Commonwealth Scientific Corp. 102
Compaq Computer Corp. 2,37 102,104,114
CompUSA, Inc. 108
CompuServe Network Services 14
Computer Associates International, Inc. 4,16,20,24,139
Computer Network Technology Corp. 8
Computer Sciences Corp. ..... Cover 1,47
Compuware Corp. 69
Comstock, Inc. 33
Concorde Solutions, Inc. 69
Consumer Project on Technology 114
Contigo Software 2
Coors Brewing Co. 77
Corel Corp. 17
Cray Research, Inc. 77
Creative Development 144
Current Analysis 63
CyberSafe Corp. 63
Cypress Semiconductor Corp. 114
DST, Inc. 85
Dunn Corp. 1,26
Data General Corp. 2
Dataquest ..... Cover 1,1,37
Dell Computer Corp. 33,102,104 106,114,142
Dalmarva Power & Light Co. 4
Delphi Group, Inc. 6
Delta Airlines ..... Cover 1,47
Desktop Management Task Force 101
Digital Equipment Corp. ..... Cover 1,3 28,77,85
Discover Brokerage Direct 69
DMR Consulting Group, Inc. 51
Dow Chemical Co. 1,63
Dreamworks 114
Dreamsmith Computer Products, Inc. 59
Dunagan ..... Cover 1
Dynasty Technologies, Inc. 102
Echelon Systems Corp. 9
Electronic Data Systems Corp. ..... Cover 1,12
Elizabeth Arden Co. 63
Enterprise Marketing Solutions 16
Entex Corp. ..... Cover 1
Environmental Protection Agency 47
Envision 57
Ernst & Young, LLP ..... Cover 1,6,47
Evolutionary Technologies International, Inc. 85
Excite, Inc. 138
Extreme Networks, Inc. 63
Fernland Industries, Inc. ..... Cover 1,47
Forrester Research, Inc. 8,69
Fortress Technologies Corp. 63
Foster's Daily Democrat 77
Freudenberg-NOK 2
General Partnership 28
Gadroon Networks, Inc. 63
GenuPro Media Group 2
Gartner Group, Inc. 4,63 100,104,114
Gateway 2000, Inc. 102,106,108
GEICO Direct 63
General Accounting Office 33
General Motors Corp. ..... Cover 1,12
Giga Information Group 16,63,104
Grantham Systems Support Corp. 33
GTE Corp. 33
H&R Block 2
Hambrecht & Quist, Inc. 138
Hewlett-Packard Co. 2,3,8,14 16,63,77,102,104
Hitachi America Ltd. 80
Hobby Markets Online 144
Humana Insurance Co. 102
I2 Technologies, Inc. 47
IBM ..... Cover 1,1,3,8,14,16 17,28,47,49,61,63,63,78,101,102,113
IDT Corp. 57
Illuminata, Inc. 139
Industry Advisory Council 47
Informatica Corp. 85
Informix Software, Inc. 8,20,144
InfoWorld Media Group 2
Intel Corp. 49,101,106,108,114,139
International Data Corp. ..... Cover 1,1,2 10,17,33,63,69,80
Internet Security Systems, Inc. 28
Interpose, Inc. 100
Intuit, Inc. 114
Iomega Corp. 104
Ipswitch, Inc. 63
JavaSoft 10
JC Penney Co. 78
JetForm Corp. 63
Johnson Controls 47
Jones Hall, Hill & White 33
JSB, Inc. 28
Kemper National Insurance Co. 3
Knowledgent 6
Lenshoot & Hassopie
Speech Products 17
Liberty Mutual Insurance Group 114
Lockheed Martin Corp. 63
Lotus Development Corp. 6,17,63,69
Lucent Technologies, Inc. 57
Mangosoft Corp. 63
Manugistics, Inc. 47
MasterCard International, Inc. 14
May & Speh 3
MCI Communications Corp. 33
Mercedes-Benz U.S. International, Inc. 47
Meridian Research, Inc. 14
Meta Group, Inc. 16,20,63,83,100
MicroAge, Inc. 102
Micron Technology, Inc. 102,106
Microsoft Corp. ..... Cover 1,1,3,8,10,16 28,35,47,57,63,69,77,93,108,113,114
Midnight Networks 63
Millbank, Tweed, Hadley & McCloy ..... Cover 1
Momentum Software, Inc. 69
Motorola, Inc. 77
MSP Strategic Communications, Inc. 116
Multi-tech Systems, Inc. 63
Mutual of New York ..... Cover 1,47
National Career Search, Inc. 114
National Center for Supercomputing Applications 24
NationsBank Corp. 4,24
NCR Corp. 2
NEC Corp. 16,37
Neoware Systems, Inc. 16
Netscape Communications Corp. 57,116,138
New Era of Networks, Inc. 69
Nortel Corp. 49
Northeast Consulting Resources, Inc. 65
Northern Trust Co. 28
Nova Information Systems, Inc. 63
Nova Cad Translatalap Ltd. 51
Novell, Inc. 4,28,63,93,114
NuView, Inc. 8
OCLC, Inc. 57
OneSystems Group ..... Cover 1,47
Optimal Networks Corp. 6
Oracle Corp. 2,9,20,69,85,93,144
Panasonic Communications & Systems Co. 78
Parker Hannifin Corp. 3
Patricia Seybold Group 14,85
Pendragon Software Corp. 8
PeopleSoft, Inc. 93
PepsiCo 49
Philips Electronics N.V. 77
Platinum Technology, Inc. 6
PPS Information Systems Staffing 93
Princeton Softech, Inc. 6
Printronix 59
Priority Payroll Services, Inc. 81
Probe Research, Inc. 57
Quark, Inc. 81
Rapid City Communications, Inc. 63
Red Brick Systems, Inc. 85
Relevant Knowledge, Inc. 138
RHI Consulting 93
Robert Half International, Inc. 93
Rockwell International Corp. 8
Sanford C. Bernstein & Co. 47
SAP AG 8,12,47,85
SAS Institute, Inc. 2,63
Scientific Atlanta 16
Seagate Technology, Inc. 106
Sears PLC ..... Cover 1
Security Dynamics, Inc. 28
Sharp Electronics Co. 8
Silicon Graphics, Inc. 77
Sonoco Products Co. ..... Cover 1
Sony Corp. 78
Sprint Corp. 33
Stylus Industries 77
Sun Microsystems, Inc. 3,8,10 16,57,69
Sybase, Inc. 63,69
Symantec Corp. 8
Systems Management Specialists ..... Cover 1,47
T. J. Maxx 114
Talarian Corp. 69
Teachers Credit Union 93
Technology & Business Integrators, Inc. ..... Cover 1,47
Technology Business Research, Inc. 2
Telarian Technologies LP 85
Template Software, Inc. 20
The Bean Co. 47,93
The Boeing Co. 49
The Dow Chemical Co. 28
The Dun & Bradstreet Corp. ..... Cover 1
The Lenz Agency 102
The MarMaxx Group 114
The National Board of Medical Examiners 83
The Partners 114
The People's Network, Inc. 57
The Standish Group International, Inc. 69
The Yankee Group ..... Cover 1,3
Tibco, Inc. 69
Tivoli Systems, Inc. 4,24
Toshiba America Information Systems, Inc. 16,78
Traveling Software, Inc. 63
Trudeau Industries 102
Trusted Information Systems, Inc. 28
U.S. Robotics 77
Vantor Corp. 102
VeriFone, Inc. 14
Vertical Systems Group 57
Vina International, Inc. 14
Warren H. Sass Associates 47
WorldCom, Inc. 33
Yahoo, Inc. 138
Ziff-Davis Publishing 2
Zona Research, Inc. 69

Cost concerns slow user migration to 32-bit apps

CONTINUED FROM COVER 1

"We've bought all of Microsoft's new stuff down the line, gotten rid of just about all of our 16-bit applications in the last year and replaced 80% of our 4,000 corporate desktops in the last 18 months with 32-bit systems and applications," Thibodeaux said.

Some developers say the key to migration is to slowly rewrite the legacy applications so the hit doesn't come all at once.

"We are still running a fairly major number of 16-bit applications, and we've got to get rid of all of them now. We've got to develop completely new applications to replace them. It feels like an endless, costly journey," said Dave Lingren, director of advanced development at Dunsgate, the IS arm of The Dun & Bradstreet Corp.

Lingren said he hopes to have first versions of most of his applications rolling by the middle of next year and complete versions six months after that.

He also plans to shift all his applications to object-oriented, World Wide Web-based programs so he can easily send legacy information to customers over the Internet.

For nearly a year, Microsoft's large corporate customers have dealt with the software giant dropping support for the Windows 3.x generation in new versions of popular packages such as Microsoft Office and development tools such as Visual C++ and Visual Basic.

But Microsoft officials said the company is trying to help its customers make the technical transition. A spokesman said the company is shipping tools such as its Network Installation Wizard, which ships with Office 97 and helps with the deployment phase. Among other things, it lets users customize the interface.

Other tools allow for automatic version control, enabling users to automatically save to older versions of files to be exchanged if needed. Microsoft also offers a resource kit that outlines some key points for users who are migrating, such as evaluating software, testing it and planning hardware requirements (see chart at left).

Despite that help, it has been far from a painless transition. Several developers said the key is to slowly start rewriting the legacy applications so the hit doesn't come all at once.

"They're not doing anything to help migrate a 16-bit application up to a 32-bit application," Lingren said. "Compared to Visual Basic 3, [Version 5] has a completely different architecture with Active Server Pages and [Hypertext Markup Language]. So you can't just migrate. But they've made [Visual Basic 5] so good it's easy to write the new applications."

Other corporate IS managers said the process is keeping their workers from focusing on other projects. They said the lesson they've learned is to just take it application by application, or desktop by desktop.

Many corporate developers said they have found it so tough to move their 16-bit applications to 32-bit, they are rewriting many of them.

"Migrating from 16- to 32-bit has been a hurdle," said the group director of IS at a major television network, where more than half the applications are still 16-bit.

"There's no migrating. It's coding changes. It's been so tough and expensive that we're still slugging along with a lot of 16-bit," according to the executive, who requested anonymity.

EASING MIGRATION PAIN

Migration Planning Kit is part of Windows Resource Kit for Windows 95. It can be downloaded from Microsoft's Web site at *www.microsoft.com*.

What you get:

- **A five-step migration process, including testing, evaluation, automation and physical rollout**
- **Tools to help write batch migration utilities; that lets users do hands-free installation with options they choose for**

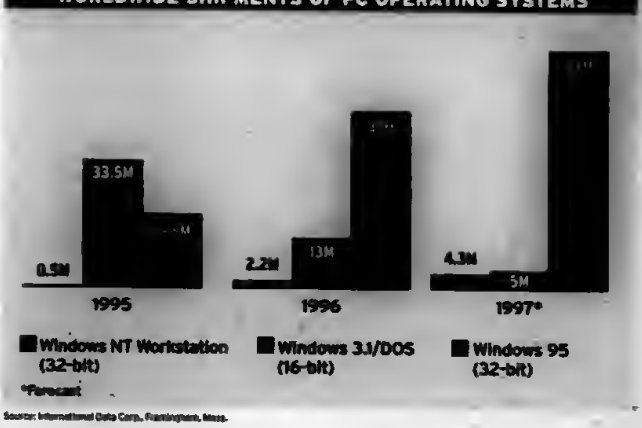
A service pack that includes documentation for using migration tools.

What you get:

- **Net setup which lets users set up network distribution share settings**
- **Setup script "unattend.txt file" which automates the process**
- **Systems Difference Tool which lets users install a list of prepicked apps**

Office 97 also lets users get bulk upgrade pricing from earlier versions.

WORLDWIDE SHIPMENTS OF PC OPERATING SYSTEMS



Source: International Data Corp., Framingham, Mass.

"SAP believes that PATROL currently offers one of the leading solutions for in-depth monitoring and management of R/3. It is important that our customers have management tools like PATROL that can ensure optimal performance and high availability."

Dr. Arnold Niedermaier,
Technology Marketing
SAP AG

PATROL

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software, Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997 BMC Software, Inc. All rights reserved.

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0386697. Computerworld (ISSN 0010-4841) is published weekly except a single combined issue for the last two weeks in December by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Olk, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest St. Paul, Minn. 55112, (800) 217-7874, Fax (612) 633-1862. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

ABC ABP

COMMENTARY

Think tribally, fail globally

By Allan E. Alter

You're not my customer. You're not my boss. It's not my deadline. I can't be bothered. Have you ever said or thought that about someone else in IS? Have you ever shafted, by commission or omission, someone in another part of your IS organization?

If so, you're part of the reason IS has such a bad reputation in many organizations. The problem is tribalism.

My dictionary defines "tribalism" as "strong in-group loyalty" or "exaltation of the tribe above other groups," and it defines "clannish" as "tending to associate only with a select group of similar background or status." That sure sounds like life inside IS. The typical IS organization is an amalgamation of tribes: data center, network administrators, help desk, management, developers, programmers.

Some tribes have distinct personalities. Help desk staffers usually are extroverts; there's more noise and chumminess at their conferences than at other IS events. Quality assurance professionals are zealots who believe they're on a mission from the quality goddess.

Some tribes regularly knock heads. When a programmer looks at a quality assurance person, he sees a pest who keeps him from completing his work.

One data center manager compares senior network and systems technicians to surgeons. "They always think they're above everyone else," he says. "They think they know best."

The IS tribes don't talk to one another enough, and they stick to their own technical priorities. When a project is running aground, don't expect one tribe to go out of its way to help another, a former CIO told me.

Users see this. To them, it's like walking into a garage and getting three explanations of your repair bill from three different mechanics.

"When we talk with one person in IS, we don't feel we are talking to everyone in IS," a line manager told me. That results in delays, wasted time and another black eye for those disorganized, dense IS people.

Ultimately, the whole business suffers. When IS thinks tribally, companies can fail globally. IT initiatives that require an international (or even just cross-divisional) perspective are held back by people who are oblivious to the big picture.

What should you do? First, don't try to abolish the tribes. You can't, because organizing into tribes is the most comfortable and natural way for highly skilled and specialized individuals to work.

But don't let tribalism overwhelm the common good. Encourage communication, then go the extra mile to make it happen. Bring your whole IS organization together in meetings, then use Q&A sessions and social time to get them to talk.

For critical positions, choose managers who make intradepartmental communication a priority. Never stop talking about business priorities. And if you're in an IS association, encourage it to get a dialogue going.

Unless IS tribes can communicate with one another, they'll never be able to communicate effectively with that other, even more alien tribe: users. □

Alter is Computerworld's department editor, Managing. His Internet address is allan_alter@cw.com.

It's the atoms, stupid

By David Moschella

During the past few years, one of the most widely shared pieces of conventional Web wisdom has been that the world of bits will change much more than the world of atoms.

The logic has seemed infallible: Because pure information businesses such as banking, insurance and publishing can be fully replicated in cyberspace, those sectors should surely be the most radically transformed portions of our economy. Someday, they probably will.

But for now, things are evolving very differently. Many of the major bit-based industries seem to be passing through the Web's early years relatively unscathed. Outside the computer business itself, Web-based newspapers and magazines have established only a minor presence. Ditto online entertainment, be it music, drama or sports. From a financial services perspective, how much has banking or insurance really changed?

In contrast, an increasing number of atom-based industries are on the verge of revolution. Amazon.com clearly has created panic at rival booksellers Borders and Barnes & Noble, as has Dell Computer among PC resellers. More recently, the automobile dealer business, with its absurdly secretive sales and pricing culture, has shown signs of imminent collapse as customers flock to the Web to get accurate pricing information.

To the surprise of many, these atom-based Web success stories have become the signature examples of what consumer electronic commerce means.

The explanation is simple. The savings atom-based companies gain by bypassing traditional channels are more compelling than the enhanced services that characterize most online bit-based offerings. In the case of books, PCs and cars, consumers directly benefit from the real costs that are taken out of the distribution system. Sure, there are many non-price-related benefits, such as convenience, customization and choice. But in most cases, those are of secondary importance.

In contrast, in many bit-based businesses, especially those supported by advertising, there's little consumer cost to be reduced. Therefore, Internet-based systems compete mostly on convenience and functionality. With the Web still immature, those enhanced services, although certainly possible, often are risky. The result is that very few bit-based businesses have been truly revolutionized.

What about online stock trading and travel services? Aren't those equally compelling symbols of a bit-based revolution? Only partially. In both cases, the Web basically is being used to replace telephone calls — essentially eliminating a customer-service agent. Clearly, that's just another form of disintermediation. Once again, lower prices, not enhanced services, drive the demand.

In other words, the real consumer electronic-commerce excitement on the Web is consistently found in areas where buyers can save money. Perhaps that shouldn't be surprising, but it's still often overlooked. It also has profound implications for near-term Web evolution.

Businesses that are primarily supported by advertising will find it more difficult to save consumers money. Perhaps less apparent, industries such as insurance and banking won't take off on the Web until they offer a more tangible value proposition. They almost totally have failed to do that. Indeed, banks, with their recent efforts to charge for ATM use, appear to be heading in the opposite direction.

As you examine your company's Web strategy, keep in mind one simple question: "What can we do online that saves our customers money?" If the answer is "Not much," the Web probably won't revolutionize your core business any time soon. But if there are areas of potential savings, you'd best get cracking. Because if you don't, someone else certainly will. And if you're in the business of selling atoms, be doubly careful. You're now clearly where the action is. □

*Moschella is an author, independent consultant and weekly columnist for Computerworld. His Internet address is david_*

STARTING TODAY, THE RULES HAVE CHANGED. SYBASE'S NEW ADAPTIVE SERVER™ PRODUCT FAMILY IS GOING TO HELP YOU USE INFORMATION MORE POWERFULLY THAN EVER BEFORE. THAT'S BECAUSE ADAPTIVE SERVER IS BASED ON A NEW ARCHITECTURE THAT IS OPTIMIZED FOR SPECIFIC APPLICATION REQUIREMENTS. ▶ OUR OPTIMIZED DATA STORE APPROACH HANDLES TODAY'S CUSTOMER-CENTRIC APPLICATIONS, SUCH AS THE INTERNET, DATA WAREHOUSING, E-COMMERCE AND MOBILE COMPUTING. INSTEAD OF A ONE-SIZE FITS ALL APPROACH, YOU HANDLE INFORMATION ON YOUR TERMS. ▶ ADAPTIVE SERVER ALSO FEATURES COMMON SERVICES ACROSS ALL DATA STORES. THESE SERVICES INCLUDE AN EASY TO USE MANAGEMENT INTERFACE, COMMON DATA ACCESS AND MOVEMENT, WEB ACCESS AND INTEGRATED SECURITY. ▶ AT THE HEAD OF OUR FAMILY IS ADAPTIVE SERVER ENTERPRISE, WHICH CONTINUES TO BE A MARKET LEADER IN MAINLINE OLTP PERFORMANCE AS WELL AS MIXED WORKLOAD ENVIRONMENTS. ▶ THE ADAPTIVE SERVER FAMILY IS THE CORNERSTONE OF OUR ADAPTIVE COMPONENT ARCHITECTURE™, AN OPEN, INTEGRATED, END-TO-END ARCHITECTURE THAT INCLUDES EVERYTHING FROM HIGH PERFORMANCE SERVERS TO LEADING EDGE MIDDLEWARE AND ENTERPRISE DEVELOPMENT TOOLS. AND IT'S SOMETHING YOU SHOULD DEFINITELY BE READING UP ON. ▶ TO DO JUST THAT, VISIT US AT WWW.SYBASE.COM/ADAPTIVESERVER. OR CALL FOR OUR FREE INFORMATION KIT ON THE ADAPTIVE SERVER FAMILY AT 1-800-8SYBASE (REF. ASCW).

ADAPTIVE SERVER

SYBASE®

THE FUTURE IS WIDE OPEN.

©1997 SYBASE, INC. ALL RIGHTS RESERVED. ALL TRADENAMES ARE PROPERTY OF THEIR RESPECTIVE OWNERS.

The Back Page

alt.cw

Dispatches & Passages from the fringes of the electronic frontier

Ultrapractical Web sites

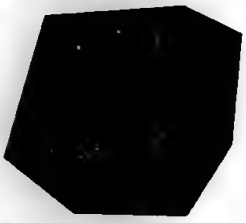
The holiday season means weight gain for the average American. Can you afford to gain weight? Should you be trying to lose? Tap in to the Shape Up America site and calculate your Body Mass Index (*www2.shapeup.org*). An even grimmer site is the Heart Attack Survival Calculator (*www.mediqual.com*), where you plug in your age and vital signs to find out your probability of survival. — Sharon Machlis and Kim S. Nash

Public accountability has come to the once-secretive world of hospitals. The American Hospital Directory site (*www.ahd.com*) has data for virtually every U.S. hospital, such as average length of stay, charges for specific diagnoses and procedures performed.

No bookmark list should be without these useful but obscure sites: Learn2.Com (*www.learn2.com*) with tutorials on how much to tip, how to tie a necktie and other Life 101 topics; the Virtual Reference Desk (*www.refdesk.com/facts.html*); and the FAQ Finder (*http://ps.superb.net/FAQ/*), which has frequently-asked-question documents for topics ranging from client/server to viruses.

GOING ONCE, TWICE, CYBERSOLD!

The coin auction site Numismatists Online (*www.numismatists.com*) marked its second anniversary with the record-breaking sale of this 1884 $3 gold piece for $23,000 during an online auction. The site was launched in 1995 by San Francisco-based Hobby Markets Online, a profitable Internet broker for the collectibles market.



Usenet forums

The following are recent Usenet newsgroup discussion threads found on the Internet. You may be able to pick up the thread by entering keywords at the search engine www.dejanews.com.

- Mistakes by spell checkers (comp.human-factors)
- Noise and programmer productivity (comp.software-eng)
- Intranet security (comp.infosystems.intranet)
- Error messages (comp.human-factors)
- Year 2000 and Dilbert (comp.software.year-2000)
- Informix security questions (comp.databases.informix)
- Impact of multicolored text (comp.human-factors)
- Moving from Oracle to DB2 (comp.databases.ibm-db2)

[illegible] has developed a counterfeit detector that can distinguish between real $100 bills with the new security thread and fake ones that counterfeiters create with computers and color printers.

InsideLines

[redacted]

A leading IS employee at the U.S. Department of Justice said during an industry seminar last week that a big part of her job is playing cat-and-mouse with some of the country's leading lawyers. She said she had to offer a special class on how to double-click the mouse. And she swore she wasn't making up a story about one attorney who thought the mouse was actually like his remote control. He couldn't figure out why nothing happened when he pointed at his screen and clicked for a new application. If you have an interesting tidbit to pass along, contact News Editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.

Will you be a crash test dummy for Y2K mass change?

Avoid the crash. Make mass Y2K change in-house with the power and control you need and a partner you can trust

VIASOFT

m o r e o o m p h

The new AS/400e series. More power, more memory, more everything.

Thanks to 8 and 12-way processors, the new AS/400e series delivers up to 4.6 times faster performance.[1] And this new powerhouse has capacity increases as high as five times the memory and double the storage. Plus, an accelerated price performance curve gives you more power for your money. Jump-start your e-business with solution packages as low as $7,995.[2] To find out more, call 1 800 IBM-7777, ext. BA221, or visit www.as400.ibm.com

IBM.

Solutions for a small planet™

1. Based on internal IBM tests. The commercial processing workload (CPW) values are estimated based on AS/400 CPW workload. The CPW workload is measured on maximum configurations. CPW values may not be realized in all environments. 2. IBM AS/400e server model 150 published U.S. list price. IBM, the IBM logo, Solutions for a small planet, AS/400 and AS/400e are either trademarks or registered trademarks of International Business Machines Corporation in the United States and/or other countries. Other company, product and service names may be trademarks or service marks of others. *© 1997 IBM Corporation.*